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Original Communications.

PHARMACOLOGICAL CONTRIBUTIONS FROM THE UNIVERSITY OF PENNSYLVANIA.

*THE PHYSIOLOGICAL ACTION OF CHINOLINE TARTRATE.**

BY CONRAD BERENS, M.D.

I.—GENERAL REMARKS.

WHEN chinoline tartrate is administered to cats, dogs, or rabbits, either subcutaneously or by the stomach, the most marked symptoms are: *Respiratory*,—giving, first, increased frequency; second, dyspnœa; and, third, cessation. *Derangement of heart-action*,—giving, first, increased frequency and diminished force; second, diminished frequency and increased force and cessation, in diastole, if the doses have been small; or in systole, if the doses have been large. *Vomiting*, except in the case of rabbits. *Paralysis*, first of posterior extremities, then of anterior, and finally of the entire body. *Increased secretion* of bile and saliva.

In the case of frogs the drug causes the same train of symptoms. Convulsions do not appear.

* This paper is an abstract of the Henry C. Lea Prize Thesis, University of Pennsylvania. The experiments were made in the Physiological Laboratory of the University of Pennsylvania, under the direction of Prof. Robert Meade Smith, to whom I am indebted for much valuable assistance and advice.

II.—GLANDULAR ACTION.

(*a*) Secretion of saliva; (*b*) secretion of bile; (*c*) action on the spleen.

(*a*) Questions touching salivation can be, at best, only doubtfully answered. In five "general" experiments salivation was marked, while the special experiments only afforded proofs in regard to the action of chinoline upon the submaxillary gland. A large dog having been properly prepared, the secretion of the submaxillary gland was allowed to flow into a graduated tube for a period of ten minutes. The chorda tympani was then stimulated for a period of one minute with the Dubois-Reymond coil at 9 cm. The drug was then injected into the gland, and the record again taken for ten minutes, as follows:

Time. P.M.	Amt. of Flow.	Remarks.
3.56–4.06	1.9 c.c.	Normal.
4.11–4.12	.6 c.c.	Chorda tympani stimulated; coil at 9 cm. Liquid clear and watery.
4.11–4.21	2.2 c.c.	
4.25–4.35	1.0 c.c.	1 c.c. of tart. chin. solution injected into gland.
4.37–4.47	1.3 c.c.	
4.51–5.01	1.3 c.c.	Injected 1 c.c. tart. chin. solution. Liquid of syrupy consistence.
5.03–5.13	1.2 c.c.	
5.16–5.17	.4 c.c.	Stim. chord. tymp.
5.16–5.26	1.2 c.c.	Liquid still syrupy.
5.28–5.38	0.4 c.c.	Inject 1 c.c. chin. tart.
5.39–5.49	0.7 c.c.	Liquid ropy and flecked with white flocculi.
5.53–6.03	0.3 c.c.	Inject 1 c.c. chin. tart.
6.05–6.06	0.1 c.c.	Stimulate chord. tymp.; coil at 9 cm.
6.05–6.15	0.2 c.c.	
6.18–6.28	0.0 c.c.	
6.20–6.21	0.0 c.c.	Stimulate chorda tymp.; coil at 0 cm.
6.20–6.30	0.0 c.c.	
No anæsthetic was used.		1 c.c. of chin. tart. solution = 0.022 grm.

In the following experiment the preparation of the animal was the same as in the preceding experiment. The flow of saliva was noted under normal conditions, then the chorda tympani was irritated and the drug administered. Pilocarpine was then injected into the gland.

Time. P.M.	Amt. of Flow.	Remarks.
4.25–4.35	1.5 c.c.	Normal.
4.43–4.44	0.8 c.c.	Chorda tymp. stim.; coil at 9 cm.
4.43–4.53	1.9 c.c.	
4.57–5.07	0.1 c.c.	Inject 2 c.c. chin. tart. solution.
5.10–5.20	0.0 c.c.	
5.23–5.24	0.1 c.c.	Stim. chord. tymp.; coil at 9 cm.
5.23–5.33	0.2 c.c.	
5.35–5.45	0.1 c.c.	Inject 2 c.c. chin. tart. solution.
5.48–5.49	0.05 c.c.	Stim. chord. tympani; coil at 9 cm.
5.48–5.58	0.05 c.c.	
6.00–6.10	2.9 c.c.	Inject 1 c.c. pilocarpine solution = 0.011 grm.
6.12–6.13	0.0 c.c.	Stim. chord. tympani; coil at 9 cm.
6.12–6.22	0.0 c.c.	

From these two experiments, each of which was checked by control experiments, it is evident that chinoline tartrate depresses the secretion of the submaxillary gland by paralysis of the secretory fibres of the chorda tympani. This action is analogous to that of atropine, and like that of atropine, can be antagonized by pilocarpine. Vaso-motor changes have nothing to do with the apparent action of the drug. The increased flow of liquid noted in the "General Remarks" is probably derived from the parotid glands, from the stimulus, here absent, of the masticatory movements.

(*b*) Action on secretion of bile. The methods adopted by Rutherford in his well-known investigations upon the "Physiological Action of Drugs upon the Secretion of Bile," have been rigidly adhered to in the investigation of the action of chinoline tartrate upon the liver.

Experiment 1.—Dog; weight, 8500 grms. Duration of experiment, four hours. Total chinoline tartrate administered, 1.08 grms. The flow for each half-hour was noted, as follows:

Time. P.M.	Amt. of Flow.	Remarks.
3.00–3.30	2.5 c.c.	Normal.
3.30–4.00	2.5 c.c.	Normal.
4.00–4.30	3.00 c.c.	Inject into duodenum at intervals of five minutes two doses chinoline tartrate in aqueous solution, each 0.18 grm.
4.30–5.00	3.8 c.c.	At 4.45 inject 0.18 grm. chin. tart.
5.00–5.30	3.9 c.c.	At 5.15 inject 0.18 grm. chin. tart.
5.30–6.00	3.8 c.c.	
6.00–6.30	4.00 c.c.	At 6.15 inject 0.18 grm. chin. tart.
6.30–7.00	4.00 c.c.	At 7 inject 0.18 grm. chin. tart.
7.00–7.30	4.4 c.c.	

Result of experiment: increased secretion of bile. (Note.—No anæsthetic used.)

Experiment 2.—Condition same as preceding. Dog; weight, 7680 grms.

Time. P.M.	Amt. of Flow.	Remarks.
2.30–3.00	1. c.c.	Normal.
3.00–3.30	1.5 c.c.	Inject 0.18 grm. chin. tart. into duodenum.
3.30–4.00	2.3 c.c.	At 3.35 inject 0.18 grm. chin. tart.
4.00–4.30	2.4 c.c.	At 4.25 inject 0.18 grm. chin. tart.
4.30–5.00	2.8 c.c.	At 4.45 inject 0.18 grm. chin. tart.
5.00–5.30	2.9 c.c.	
5.30–6.00	2.9 c.c.	

Total drug administered, 0.72 grm. Result, increased secretion. (Note.—No anæsthetic used.)

Experiment 3.—Dog; weight, 9374 grms. Conditions as above. Total drug administered, 0.90 grm.

Time. P.M.	Amt. of Flow.	Remarks.
12.00–12.30	1.5 c.c.	Normal.
12.30– 1.00	1.3 c.c.	
1.00– 1.30	1.5 c.c.	At 1.15 inject 0.18 grm. chin. tart.
1 30– 1.45	1.7 c.c.	Inject 0.18 grm. chin. tart.
1.45– 2.00	1.8 c.c.	Inject 0.18 grm. chin. tart.
2.00– 2.15	2.5 c.c.	
2.15– 2.45	lost.	
2.45– 3.00	2 c.c.	Inject 0.18 grm. chin. tart.
3.00– 3.15	2.3 c.c.	
3.15– 3.30	2.00 c.c.	
3.30– 3.45	2.2 c.c.	Inject 0.18 grm. chin. tart.
3.45– 4.00	2.4 c.c.	
4.15– 4.30	2.00 c.c.	

Result of experiment, increased secretion. (Note.—No anæsthetic used.)

From these experiments I conclude that chinoline tartrate is an hepatic stimulant.

(*c*) Action on the spleen.

Experiment 1.—A kitten; weight not taken; curarized; artificial respiration maintained and spleen exposed in a bath of normal salt solution, kept at the proper temperature. At 3 P.M. injected into jugular vein 5 c.c. of an aqueous solution of chin. tart. = 0.2 grm.; no effect. At 3.45 P.M. repeated same dose; no effect. Animal dead at 4.25.

Experiment 2.—A kitten; conditions as in No. 1. At 2 P.M. injected into jugular vein 1 c.c. of an aqueous solution of chin. tart. = 0.02 grm.; no effect. 2.45, same dose repeated; no effect.

The results of these experiments upon the spleen are negative. Moreover, the exposure of most sensitive parts of the organism necessary to expose the spleen would render any deductions from experiments upon that organ very doubtful.

ACTION ON RESPIRATION.

(*a*) General action; (*b*) special action.

(*a*) From the five experiments made to determine the general action of chinoline tartrate upon the respiration, it is found that there is always an increase in the force and a decrease in the number of respirations during and immediately after the injection of the drug. There is a subsequent increase in the frequency of the respirations, and, if the dose of the drug is increased at once, this increased frequency is replaced by diminished frequency; the diminution becoming greater and greater, and the number of seconds elapsing between the respiratory efforts larger, till there comes a point upon the "time line" when the animal forgets to breathe, and is practically dead. But if instead of increasing the dose at once the drug is withheld for some minutes, there comes a time when each injection of the drug instead of diminishing the rate of the respirations during its administration, increases the rate at once; while finally, after a time, and the administration of large amounts of the drug, the respirations lose their rhythm, gain in force, but gradually lose in frequency, till the animal loses the *besoin de respirer* and is dead. There is found increased force in the end. In every instance the heart was found pulsating after the cessation of the respiration.

(*b*) Special action.

Alteration in frequency is the most marked symptom of the action of the drug upon the respiration. The rate of the respiratory movement is dependent upon the rhythmical functions of the respiratory centre, upon the condition of the regulator nerves, especially those running in the pneumogastrics, and upon the mental or cerebral stimuli. Action through any of these channels will produce respiratory changes.

Experiment 1.—The mental and cerebral stimuli were excluded by narcotization. The results were recorded by means of a Marey's tambour and a kymographion. The drug was administered in a solution of the strength of 0.5 grm. to 10 c.c. of distilled water.

The respirations of the animal—a rabbit—under the narcotic were 10 per fifteen seconds; after the injection of the first cubic centimetre of the drug the respirations were 38 per fifteen seconds, and after the tenth and

last cubic centimetre they were 6 per fifteen seconds. The animal ceased to breathe ten seconds after the exhibition of the last cubic centimetre. Heart found pulsating.

Experiment 2.—Conditions as in 1. Respirations of the narcotized cat were 15 per fifteen seconds, after the injection of the first cubic centimetre they were 22 per fifteen seconds, and after the twelfth and last cubic centimetre 2 per fifteen seconds. Animal ceased to breathe fifteen seconds after the last injection. Heart found pulsating. Two control experiments were made with practically the same results. Finding then the same respiratory disturbances after the injection of the drug, even where the possibility of mental or cerebral stimuli entering into the cause has been excluded, it is necessary to consider the action of the drug when the vagi are cut.

Experiment 3.—Rabbit; right vagus exposed; irritated by means of a Dubois-Reymond coil to avoid errors, and cut; left vagus treated in the same manner. The experiment continued one hour and twelve minutes in order to study the continued action of the drug. Total drug administered, 0.95 grm. Total effect, cessation of respiration. There was no preliminary rise in the rate of respirations, but each injection was followed by a fall in the rate. In the earlier part of the experiment and before any large amounts had been administered, the drug was withheld, and there was a very marked tendency in the respirations to return to the normal rate.

Two control experiments were made and gave the same results. Since it has been found that there is an increase in the rate of the respirations after each injection of the drug, not only in the normal animals, but also in those that have been narcotized, and since it has been found that there is no preliminary rise in the rate after section of the vagi, the preliminary rise in the rate is caused by irritation of the vagus roots in the lungs. Moreover, since it has been found that there is always the same ultimate effect, whether the animal be under normal conditions, narcotized, or with its vagi cut, and this effect is cessation, it must be due to an action of the drug upon the respiratory centres. Dyspnœa always precedes the final arrest of respiration, while the heart, in every case, is found pulsating after the animal has ceased to breathe; but beating in a feeble flabby fashion that allows the blood to flow sluggishly through its channels, become poisoned by an excess of carbon dioxide, and thus disturb the harmony in all the parts of the intricate animal mechanism. This is true, since, if the animal be allowed sufficient time, it throws off the excess of carbon dioxide and breathes freely once more, and the dyspnœa does not follow the administration of the drug at once, as does the increase in the rate of respiration, but only after an interval varying with the force of the heart's beat; that is, after the drug has had time to affect the respiratory centre indirectly by its action upon the circulation. On the other hand, it may be argued that the symptoms were produced by the action of the drug upon the so-called inhibitory centre, stimulating this and causing the cessation. But the existence of an inhibitory respiratory centre is uncertain, while it is easily demonstrable that there is a respiratory centre paralysis, which either directly by the drug or indirectly by vitiated blood will produce these same phenomena. Chinoline tartrate, then, must either directly paralyze the respiratory centre by contact, or so interfere with the circulatory functions as to vitiate the blood and thus cause the cessation. This latter condition would afford us an opportunity to restore the animal completely after cessation of respiration, so long as the heart continued to pulsate, while the former condition would afford no such opportunity. This argument was suggested by the following average of four experiments upon cats varying in weight not more than three hundred grammes. Two of the animals had their vagi cut. The pulse-rate, blood-pressure, and respiratory curves were made synchronously and upon the same drum.

Fig. 1 shows the plotted curves of the blood-pressure above, the pulse-rate in the middle, and of the respirations below. The observations were made every fifteen seconds and extend over six minutes. Before Fig. 2 was taken twenty-three minutes were allowed to elapse. The blood-pressure is seen to have fallen from 130 mm. at the beginning of the experiment to 80 mm., the pulse-rate from 60 to 52 per fifteen seconds, and the rate of respiration has risen from 8 to 14. The observations extend over five minutes.

The animals were allowed five minutes at the termination of the observations for Fig. 2. Fig. 3 begins then five minutes later, and shows the blood-pressure to have fallen to 43 mm., the pulse-rate to 39, and the respirations to have risen to 9. Duration, six minutes.

Fig. 4 begins after an interval of fifteen minutes. The blood-pressure has risen to 65 mm., the pulse-rate to 45, while the respirations still remain 10.

Two minutes before the end of Fig. 4 it is seen that the respirations had fallen to zero, and it was necessary to maintain artificial respiration. The blood-pressure is seen to have fallen to 2 mm., while the pulse remains practically the same, though slower.

After artificial respiration had been kept up for sixteen minutes the animals began again to breathe, and Fig. 5 shows the blood-pressure at 40 mm., the pulse at 27, and the respirations at 4 per fifteen seconds.

Nine minutes after the termination of Fig. 5, Fig. 6 was begun, and the cut shows the blood-pressure at 40 mm., the pulse-rate at 25, and the respirations at 5.

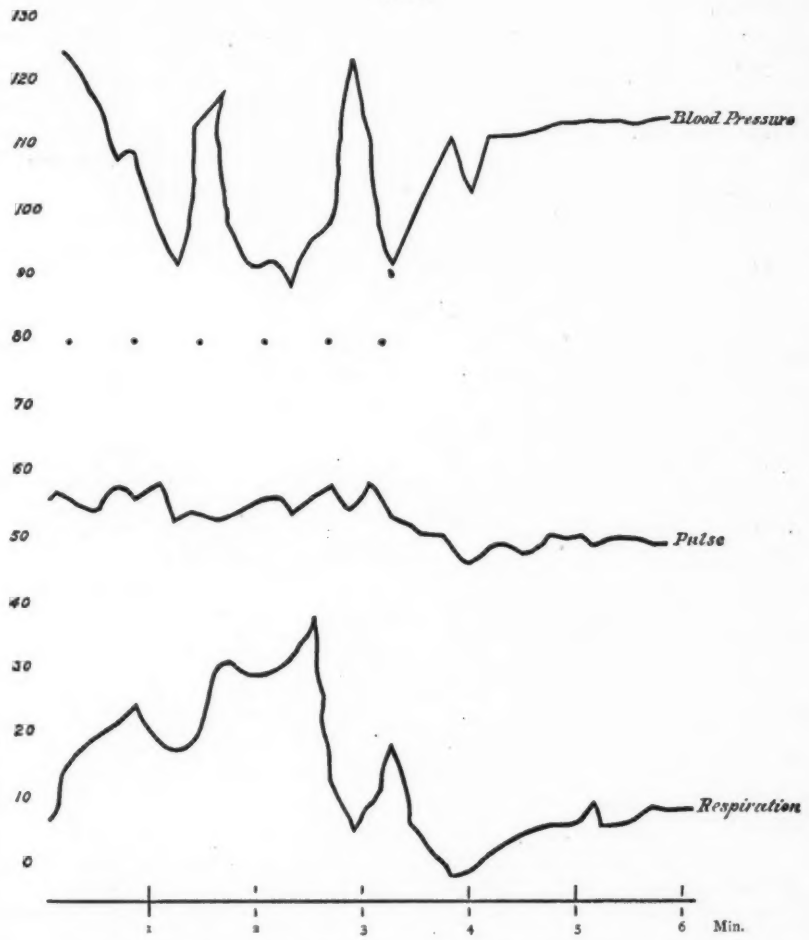
The drug was then administered in quickly succeeding doses till the blood-pressure, the pulse-rate, and the respirations fell together to zero, and the animals were dead.

The hearts were found in diastole. Each animal received about 1.5 grms. of chinoline tartrate in divided doses.

ACTION ON CIRCULATION.

(*a*) General action on pulse-rate; general action on blood-pressure.

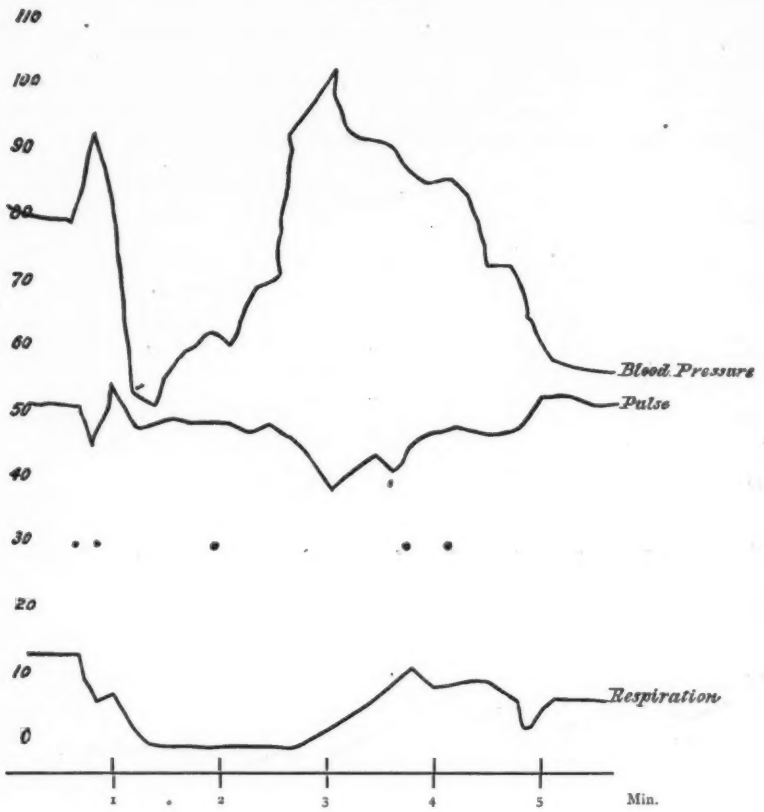
FIG. 1.



The dots represent injections of 0.05 grm. Chinoline Tartrate in 1 c.c. distilled water.

(*a*) Of four experiments made to determine the general action of the drug upon the circulation, two showed a rise in the pulse-rate after the injection of the first dose of the drug; two showed a fall in the rate after the first dose; at the end of one there was an increase of 1 pulsation per fifteen seconds; another shows an increase of 6, a third an

FIG. 2.


110
100
90
80
70
60
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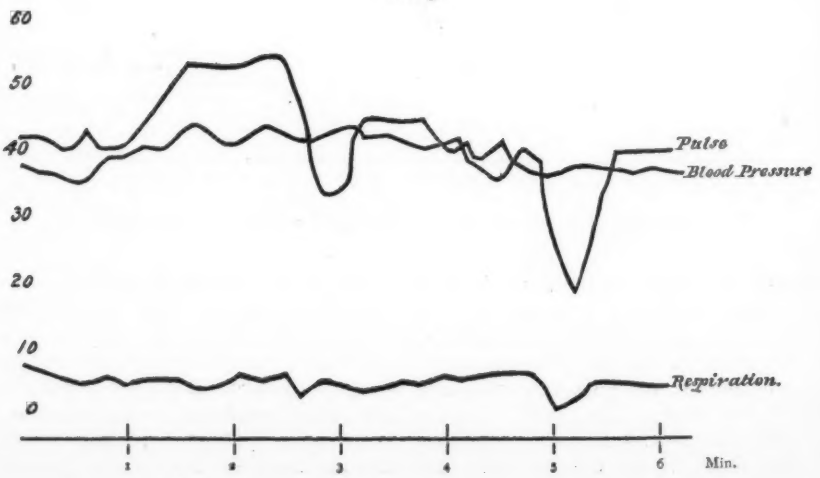
0
Blood Pressure
Pulse
Respiration
1
2
3
4
5
Min.

FIG. 3.


60
50
40
30
20
10
0
Pulse
Blood Pressure
Respiration.
1
2
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4
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6
Min.

FIG. 4.

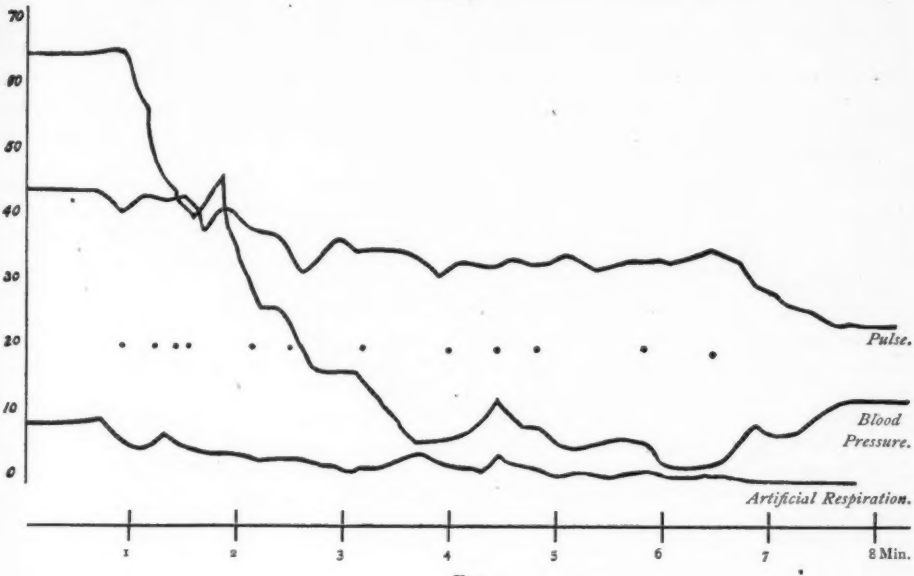


FIG. 5.

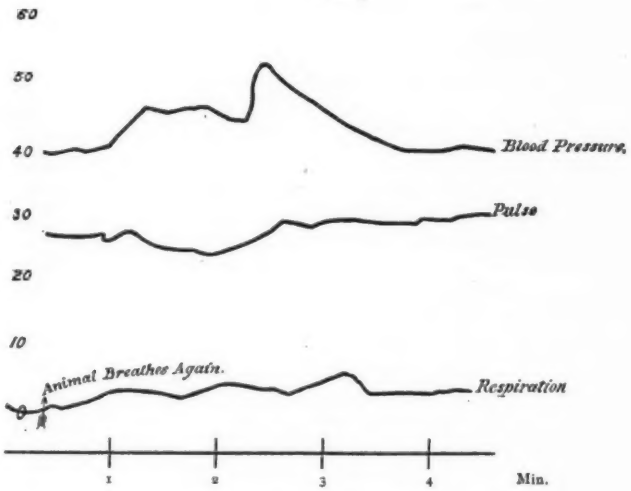
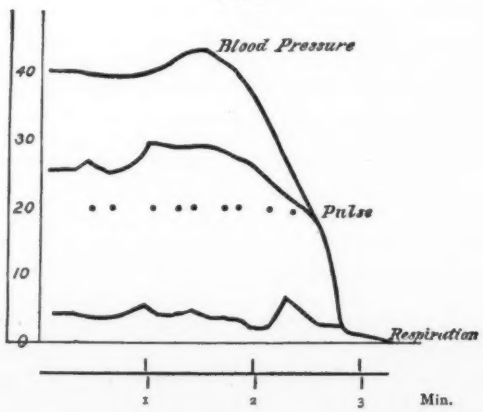


FIG. 6.



increase of 1, and the fourth a decrease of 52 beats per fifteen seconds. As for blood-pressure, all four show an immediate fall in the pressure: in three this fall is permanent, and respectively 42 mm., 50 mm., 4 mm,, while in the fourth there is an increase of 3 mm.

Studying the tracings from these experiments, one is immediately struck by the strong resemblance of the curves after each injection of the drug to those given after stimulation of the vagi. (As it has been found necessary to administer the drug in aqueous solution, the action of 1 c.c. of aq. dest. thrown into the jugular vein was several times noted, and was so slight as to be totally disregarded in experiment.) It was further found from these experiments that the action of the drug upon the respiratory system was so marked as to make it impossible to determine just how much of the results was to be attributed to action on the circulation, and therefore all future experiments are made upon animals under the action of curare.

After the respiratory influence has been eliminated it is found that the general action of the drug upon the circulation is to diminish the rate of pulsation and to lower the blood-pressure.

(*b*) Special action on pulse-rate; special action on blood-pressure.

The pulse-rate may be reduced by—1. Inhibitory stimulation; 2. Direct action upon the heart or its contained ganglia.

1. Inhibitory stimulation.

Experiment 1.—A cat, weighing 3.4 kgms., was curarized, and the vagi exposed and irritated to avoid errors. The drug was then administered, and the nerves again stimulated by the Dubois-Reymond coil. Stimulation of normal nerve gave a reduction of the pulse-rate of 19. After injection of the drug, stimulation by the same coil gave no effect.

Experiment 2.—Cat, weighing 3 kgms. Conditions as before. Total drug administered, 0.52 grm.

Stimulation of normal nerve caused rate of pulse to fall from 47 to 22 per fifteen seconds. Stimulation of nerve after injection of the drug gave no effect. Two control experiments gave the same results. A fifth experiment was made under the same conditions; and in addition, after the animal had received the drug, the vagi were cut and the drug again injected. The subject was a cat; weight, 3.8 kgms. Total drug exhibited, 1 grm. Pulse-rate reduced from 55 to 0 per fifteen seconds. Effect of section of vagi very slight, the pulse returning at once to its former condition.

These experiments afford no room to doubt that the vagi are paralyzed, but at the same time show that the action of the drug must be through some other channels, as paralysis of the vagi should cause increased pulse-rate. The action of the vagi can be eliminated by atropine.

Experiment 6.—Cat; weight, 3.6 kgms. Vagi exposed, irritated, atropine administered, and the vagi proved paralyzed. The drug was then administered to the extent of 1.3 grms. The pulse-rate fell from 45 to 16 per fifteen seconds. This and its control experiment afford further proof that chinoline does not slow the pulse by action on the vagi; and as the heart and its contained ganglia are the only remaining channels, they were considered as follows:

Experiment 7.—Dog; weight, 10.8 kgms. Condition as before, and, in addition, sympathetics, depressors, and pneumogastrics cut, a tracing then taken, and the cord severed between the occiput and atlas. Total drug administered, 1.8 grms. Pulse reduced from 55 to 0 per fifteen seconds. Necropsy showed all nerves well severed.

Experiment 8.—Dog; weight, 10 kgms. Total drug exhibited, 1.6 grms. Conditions as in preceding experiment. Result, pulse reduced from 48 to 0 per fifteen seconds. Necropsy showed all nerves clean cut.

Experiment 9.—Repeats 7 and 8. Subject, cat; weight, 3.5 kgms. Total drug exhibited, 0.7 grm. Pulse reduced from 45 to 0 per fifteen seconds. Necropsy showed all nerves well severed.

The isolation of the heart in these experiments makes it certain that the action of the drug must be either upon the heart itself or upon its contained ganglia. To determine, if possible, whether the drug acts upon the heart-muscle, the following experiments were made:

Experiment 1.—A frog's heart having been carefully excised, was placed in a normal salt solution, and its excitability tested by the Dubois-Reymond coil. The heart responded vigorously with the coil at 33 cm.; but having been placed in a saturated solution of chinoline tartrate, responded very feebly after fifteen seconds, though the coil was at 10 cm., and failed to respond even with the coil at 0, ten seconds later, but lay in the solution white and shrivelled. Three other hearts were taken from as many frogs, and subjected to the same conditions. The results were the same: the hearts immersed in chinoline entirely lost all excitability after an interval of from fif-

teen to thirty seconds. Further, a frog's heart, freshly excised, was injected with four minims of a saturated solution of chinoline. Firm contraction followed immediately.

Since it will be proved later that chinoline coagulates albumen and myosin, it is a safe inference to draw that chinoline slows the pulse-rate by a direct paralyzant action upon the heart-muscle, which is so complete as to wholly obscure the result of its action upon the vagi, which also are paralyzed.

ACTION ON BLOOD-PRESSURE.

It has been already noted that the action of chinoline lowers blood-pressure. Moreover, it has been found that when the individual doses of the drug were small, and exhibited at somewhat long intervals, the tendency of the pressure was invariably to return to its normal condition, though never to exceed that; and when the doses were exhibited at short intervals this tendency to regain the norm disappears gradually, till finally the pressure sinks away to zero. Blood-pressure may be lowered by a slow rate of the heart's action, by imperfect ventricular contraction, by relaxation of the small arteries, or, finally, by obstructed pulmonary circulation.

But the conditions that modify the functional activity of the cardiac muscle cannot be separated from those governing the other muscles of the body, since a general muscle poison, and particularly one that exerts its influence by depriving the blood of its oxygen, will affect all muscular tissues alike.

We have already proved that chinoline paralyzes the heart-muscle, and will prove, under action on nervous system, that the drug paralyzes the peripheral nervous system, so that what remains to be proved is what the action of the drug is upon the vaso-motor centres. Before proceeding further, it is necessary to state that action on the heart-ganglia is excluded by the fact that one of the prominent elements in the investigation of the action of chinoline upon the pulse-rate was the constancy in the rhythm of the pulse. Had the poison affected the heart-ganglia, its rhythmical functions would have been disturbed.

Experiment 1.—Cat; weight, 2.7 kgms.; curarized; artificial respiration kept up; left sciatic nerve exposed; vagi exposed; one gimlet electrode in occiput, the other in atlas. Duration of experiment, twenty-six minutes. Total drug administered, 0.15 grm. Effect of stimulation of vagi, after poisoning = 0; of sciatic, = 0; of medulla, = 0. Necropsy showed nerves well prepared and electrodes properly placed. The blood-pressure was reduced from 130 mm. to 28 mm. Before the administration of the drug each nerve was stimulated, and the effect recorded to avoid errors.

Experiment 2.—Cat; weight, 3 kgms. Conditions same as in preceding experiment. Result of experiment identical with that of preceding experiment.

Experiment 3.—Dog; weight, 5.5 kgms. Conditions as before; result as before.

Experiment 4.—Cat; weight, 3.8 kgms. Conditions as before, and in addition, vagi cut. Total drug administered, 0.26 grm. Pressure reduced from 100 mm. to 1.0 mm. Result same as in preceding experiments. Thus it is seen the vagi are paralyzed, the vaso-motor centres in the medulla are paralyzed, stimulation of the sciatic nerve has no effect, and the blood-pressure is invariably *markedly lowered.*

ACTION ON NERVOUS SYSTEM.

Paralysis it is seen is a marked symptom of the action of chinoline tartrate, and a consideration of the general experiments with the drug shows that this paralysis is neither preceded nor succeeded by convulsions.

Paralysis may be caused by action on motor nerves, on sensory nerves, or on the spinal cord.

Action on motor nerves.

Experiment 1.—Two frogs, weighing respectively 25 grms. and 26.4 grms. A sciatic nerve exposed and severed high up in each, and placed upon the electrodes of a Dubois-Reymond coil; the nerves kept moist by a piece of bibulous paper saturated with a two per cent. solution of sodium chloride. Both nerves tested, and 1 c.c. of chinoline tartrate solution, = 0.02 grm., injected into the posterior lymph-spaces of one of the frogs, and the effect noted, as follows:

Frog.	A.	B.	Time.	Remarks.
Coil at	31 cm.	31 cm.	4.50	Injected chinoline into B at 4.48.
"	31 "	31 "	5.00	
"	30 "	29 "	5.10	
"	30 "	29 "	5.20	
"	29 "	27 "	5.30	
"	29 "	26 "	5.40	
"	29 "	23 "	5.50	
"	29 "	20 "	6.00	
"	28 "	18 "	6.10	
"	28 "	14 "	6.20	

Experiment 2.—Conditions as before. A = 22 grms.; B = 23 grms.

Frog.	A.	B.	Time.	Remarks.
Coil at	42 cm.	41 cm.	3.00	Inject 1 c.c. chin. tart., = 0.02 grm., into B at 3.08.
"	42 "	41 "	3.10	
"	42 "	40 "	3.20	
"	42 "	39 "	3.30	
"	41 "	37 "	3.40	
"	40 "	35 "	3.50	

Frog.	A.	B.	Time.	Remarks.
Coil at	41 cm.	36 cm.	4.00	
"	40 "	31 "	4.10	
"	40 "	29 "	4.20	Gastrocnemii at end of experiment irritable in A at 35 cm.; in B at 20 cm.
"	40 "	29 "	4.30	

Two control experiments were made, and gave the same results,—a decrease in the irritability of the nerves in the poisoned frogs. This action may be due to paralysis of the nerves, thus preventing the transmission of the stimulus to the muscle, or the muscles themselves may be paralyzed.

Experiment 1.—A frog was taken, and the so-called muscle-nerve preparation made with it. Both sciatics were then immersed in normal salt solution and tested. The right sciatic was then placed in a saturated aqueous solution of chinoline tart., and the nerves again tested at intervals of ten minutes.

Frog.	Right S.	Left S.	Time.	Remarks.
Coil at	15 cm.	15 cm.	4.40	
"	15 "	15 "	4.50	
"	15 "	15 "	5.00	
"	20 "	20 "	5.10	
"	20 "	20 "	5.20	Right S. placed in chinoline solution.
"	20 "	24 "	5.30	
"	0 "	20 "	5.40	No response from Right.
"	0 "	20 "	5.50	

Experiment 2.—Same conditions as in 1.

Frog.	Right S.	Left S.	Time.	Remarks.
Coil at	20 cm.	20 cm.	4.00	
"	16 "	20 "	4.10	Right S. in sat. chin. solution.
"	0 "	18 "	4.20	
"	0 "	18 "	4.30	No response from Right.

Two control experiments for these were made, and gave the same results,—paralysis of the nerve.

As to the muscles. The gastrocnemii, with their nerves attached, were dissected from a frog, and the muscles, having been placed in a normal salt solution, were tested. The right muscle was then placed in a saturated solution of chinoline tartrate. The nerves in both preparations were kept moist by bibulous paper saturated with one per cent. salt solution.

Experiment 1.—

Frog.	Right G.	Left G.	Time.	Remarks.
Coil at	18 cm.	18 cm.	2.10	Right in chinoline solution.
"	15 "	18 "	2.15	
"	12 "	18 "	2.20	
"	10 "	17 "	2.25	
"	8 "	18 "	2.30	
"	4 "	18 "	2.35	
"	0 "	18 "	2.40	

Experiment 2.—As in preceding.

Frog.	Right G.	Left G.	Time.	Remarks.
Coil at	28 cm.	28 cm.	3.00	Right G. in sat. sol. of chinoline tart.
"	26 "	28 "	3.05	
"	22 "	28 "	3.10	
"	16 "	28 "	3.15	
"	10 "	28 "	3.20	
"	6 "	28 "	3.25	
"	4 "	28 "	3.30	
"	0 "	28 "	3.35	Muscle R. fails to respond.
"	0 "	28 "	3.40	

Four repetitions of these experiments gave such a uniformity of results that it is to be concluded that the drug acts as a direct paralyzant to muscular tissue. We already know that chinoline paralyzes nerve-tissue, and hence it produces a loss of motor excitability by direct action both upon the nerves and upon the muscles.

Action on sensory nerves.

Experiment 1.—A frog; weight, 30 grms. Femoral vessels of right leg ligated at 3 P.M. At 3.10, 0.02 grm. of chinoline tartrate in solution injected into anterior lymph-spaces. At 3.25, sensation and motion in both extremities feeble. At 3.35, frog scarcely notices stroking or pinching. At 3.45, sensation and motion entirely lost in both extremities.

Nerve of ligated extremity irritable at			42 cm.
Muscle	"	"	35 "
Muscle of unprotected extremity	"		22 "
Nerve	"	"	32 "

Experiment 2.—Frog; weight, 33 grms. Conditions as in preceding experiment. At 4 P.M., 0.02 grm. chinoline injected. Till 4.20 frog remained about the same; at 4.25, sensation and motion feebly shown on stroking; 4.35, neither sensation nor motion.

Nerve of ligated extremity responds at			39 cm.
Muscle	"	"	30 "
Nerve of normal	"	"	35 "
Muscle	"	"	29 "

These experiments prove no action upon sensory nerves, since had there been any such action it should have appeared in the unprotected leg only.

In another series of experiments the femoral artery in one leg was ligated, the sciatic nerve exposed and tested both peripherally and centrally. The drug was then administered, and the ends of the nerves again tested.

Experiment 1.—

Left Sciatic.	Periph.	Cent.	Right S.	P.	C.	Time.
Coil at	32 cm.	25		32 cm.	25	4.30
"	40 "	25		32 "	25	4.40
"	36 "	25		40 "	25	4.50
"	36 "	25		26 "	25	5.00
"	36 "	25		35 "	25	5.10

Remarks.—At 4.31 drug was injected. At end of experiment no effect was produced by irritation of cord with coil at 0.

Experiment 2.—Conditions as in 1.

Left Sci.	P.	C.	Right Sci.	P.	C	Time.	Remarks.
Coil at	30 cm.	19		25 cm.	19	5.00	
"	18 "	17		24 "	17	5.05	
"	23 "	17		18 "	17	5.10	
"	17 "	27		28 "	17	5 15	
"	23 "	16		27 "	16	5.20	Inject 16 minims of sat. solution of ch tart.
"	25 "	16		27 "	16	5.25	
"	22 "	16		22 "	16	5.30	
"	22 "	10		22 "	16	5.35	
"	22 "	8		22 "	16	5.40	

Experiment 3.—Frog; weight, 30 grms. Left leg ligated, excluding the nerve. 0.02 grm. chinoline tart. in solution injected at 9.10 A.M. At 9.15, frog draws foot from severe pinching; both feet alike. 9.25, sensibility of anterior extremities lost; that of posterior extremities greatly diminished. Frog will wink when stroked over the eyes. 9.30, neither leg gives any evidence of the presence of the pure sulphuric acid that is upon it. Muscles in both legs respond to electricity with coil at 18 cm. Nerves respond at 8 cm. Cord does not transmit electrical stimulus.

Experiment 4.—Conditions as in 3.

At 9.40 A.M. inject into anterior lymph-spaces 0.02 grm. chin. tart. in solution. At 10, no response to pure acid upon legs.

10.20 A.M.,	muscles	respond	to	coil	at 10 cm.
10.20 "	nerves	"	"	20	"
11.00 "	"	"	"	12	"
11.00 "	muscles	"	"	6	"

At 11.20, cord slightly transmits electrical stimulus. At 11.40, electricity has no effect on cord. Thus it is seen that the action of the drug is not upon sensory nerves, but upon the spinal cord, paralyzing it.

ACTION ON REFLEX ACTION.

It has been noted that reflex action is lost. To have reflex action the following parts must be intact: ends of sensory nerves, sensory nerve-trunks, ends of motor nerves, motor nerve-trunks, muscles, and spinal cord. Loss of reflex action would indicate the disorganization of one, or perhaps of all, of these parts.

To investigate the action of chinoline upon the reflex action the method of Türck was followed.

Experiment 1.—Frog properly prepared. A solution of sulphuric acid of such strength as to call forth a reflex from the frog after about 16 beats of the metronome was used, and after each immersion into it the frog's legs were carefully washed.

Reflex after Beats of Metronome.	Time. P.M.	Remarks.
17	12.10	
14	12.13	
12	12.16	
11	12.19	
13	12.22	
12	12.25	
12	12.28	
12	12.31	
12	12.34	
12	12.37	Inject 0.02 grm. chinoline
8	12.41	tart. in solution.
7	12.47	
10	12.50	
8	12.53	
9	12.56	
11	12.59	Muscles found irritable.

No response to immersion in pure acid at 1:02 P.M.

Ten repetitions of the above experiment gave convincing proof of the loss of reflex action.

In another series of experiments the frog was prepared as before, and in addition the cord was severed on a line with the posterior edge of the membrana tympani, thus excluding the inhibitory centres of Setschenow. Reflex action tested as before, with the same loss. Muscles found irritable at end of experiment.

Three repetitions of the experiment were made, and all proved the loss of reflex action after the administration of 0.02 grm. of chinoline tartrate.

Still a third series of experiments were made, by first tying the abdominal aorta and then injecting the drug. Four such experiments were made, and gave the following average results:

At beginning of experiments, cord found irritable to slightest electrical stimulus. Twenty minutes after injection of 0.02 grm. of chinoline, cord failed to respond to strongest currents.

Reflex action at beginning of experiments, 10; ten minutes after exhibition of drug, 15. Twenty minutes after injection of drug, reflex action lost. Nerves found irritable at 26 cm.; muscles at 20 cm. In conclusion, the chinoline tartrate lessens, and finally abolishes, reflex action by direct action on the spinal cord, and by a slight action upon the other nervous tissues and upon the muscles.

ELIMINATION.

Experiment 93.—The urine from a dog that had been poisoned by the frequent repetition of 0.02 grm. hypodermic doses of chinoline tartrate was taken and divided into two parts, *a* and *b*; *a* was then treated with amyl iodide and gave no result (blue cyanine should have appeared had any chinoline been present); *b* was treated with chromate of potass., saturated solution, and gave no result (a yellow crystalline precipitate should have appeared had chinoline been present).

Experiment 94.—The urine was collected from a rabbit that had been poisoned in the same manner as in the preceding experiment, and treated in the same manner, giving no results.

Experiment 95.—Urine from a dog, treated as above, gave no results.

Experiment 96.—Urine from myself after I had taken 1.5 grms. of drug, treated as before, gave no results.

There appeared to be no increased secretion, though the amount of secretion during the previous twenty-four hours was noted and compared with that of the two periods of twenty-four hours each immediately following the exhibition of the drug.

Several other experiments were simple repetitions of the foregoing four experiments, and gave the same results. Careful analytic examinations, to detect any possible changes present in the urine, were prevented by the lack of time.

In conclusion of the elimination of the drug, it seems very probable that it is not eliminated by the kidneys. This result confirms the statement in the *Boston Med. and Surg. Journal* for March 30, 1882, which says of chinoline, when administered internally, it has not been found in the urine.

SECTION VI.—ACTION ON MUSCULAR AND NERVOUS TISSUES.

These actions of the drug have already been touched upon. We already noticed in Experiments 49, 50, 51, 52, 53, 54, and 55, that when the excised part of a frog is thrown into a saturated solution of chinoline it rapidly becomes pale, shrivelled, and unable to respond to an electrical stimulus. Will the drug act in the same way upon voluntary muscles? Experiment 97, a frog was taken, and the muscles of the thigh exposed, after the animal had been properly secured, and upon them was dropped a small amount of a saturated solution of chinoline. After ten minutes the muscles became pale, hard, and unable to respond to electricity, the leg being rigidly extended. Experiments 98, 99, and 100 repeat the above with the same results. Experiments 101 and 102 were made in the same manner, save that the pure "oil" of chinoline was used. The results were the same, and that this action is due to the coagulation of the myosin experiments 103 and 104 prove, as follows: A specimen of myosin, prepared by Hoppe Seyler, and kindly given to me by Dr. Marshall, was taken and dissolved in a carefully-prepared ten per cent. solution of sodium chloride. The solution of myosin thus obtained was in each experiment precipitated by the addition of the saturated solution of chinoline, though no result was obtained when the chinoline and salt solution alone were mingled. Further, experiment 105 was made to test the action of chinoline upon "egg" albumen. Pure albumen was taken, and the drug in saturated solution added. The albumen became at once clouded, and after a very few minutes white, and quite hard. Experiments 106 and 107 repeat 105 with the same results. Experiments 108 and 109 were made in the following manner: A ten per cent. solution of albumen was made, and to this the saturated solution of chinoline added first, in Experiment 108, in equal proportion. Result, a white, flocculent precipitate, not disappearing on the application of heat. Second, in Experiment 109, twenty drops of the saturated solution of chinoline was added to 10 c.c. of the solution of albumen. Result same. Conclusion: chinoline paralyzes muscle by coagulating myosin.

ACTION ON NERVE-TISSUE.

When a nerve, the sciatic, for instance, is thrown into a saturated solution of chinoline, within thirty seconds it loses its power to transmit an electrical stimulus to the attached muscle, which has been protected from the action of the drug. This has been the invariable result of seven experiments. Moreover, when the spinal cord is laid bare, and a little of the tartrate of chinoline is sprinkled upon it, the area of no response to electricity increases directly with the absorption of the drug, which is rapid. Three experiments of this kind gave the same result. Conclusion of action on muscle and nerve-tissues: chinoline directly applied to a muscle, either as the tartrate or as pure chinoline, coagulates the myosin of the muscle; directly applied to nervous tissue, chinoline almost immediately destroys the functional activity of the nerves.

In addition to the above six sections, there is one more that properly belongs to the physiological action of the drug,—*i.e.*, action on temperature.

SECTION VII.—TEMPERATURE.

Experiment 110.—Albino rabbit; weight, 1000 grms. Total drug administered, 1.5 grms. Conditions: On the previous day the rabbit was tied in just such a position as that necessary for the experiment, and its temperature taken, per rectum, at intervals of ten minutes till no further diminution was noted, when it was allowed twenty-four hours to recover. The time which elapsed before the temperature became fixed was fifty-five minutes. The next day the same animal was taken and placed in the same position, and

allowed to remain there undisturbed for fifty-five minutes. The temperature before the animal was tied down was 39° C.; after the fifty-five minutes had elapsed it was found to be 38.2° C., corresponding exactly with the result of the previous day. The drug was then administered in 30 m. doses of chinoline solution, each dose equal to 0.05 grm. of chin. tart., till the symptoms of dyspnœa became excessive. The temperature was taken at short intervals, as follows:

Time.	Temp.	Remarks.
P.M.		
5.05	38.2° C.	
5.07	38.2°.	Inject 30 m. into jugular.
5.15	38.0°.	
5.20	37.6°.	Inject 30 m. into jugular.
5.25	37.0°.	
5.27	37.0°.	Inject 30 m. into jugular.
5.28	36.5°.	Great dyspnœa.
5.29	36.2°.	
5.30	35.5°.	
5.33	35.1°.	
5.39	35.8°.	

Total reduction of temperature is 3.1° C.

Experiments 111 and 112 repeat the foregoing, with the following results respectively, 3.4° C., 2.7° C., the rabbits dying in experiments 110 and 111, while that of experiment 112 recovered, the drug having been administered to it subcutaneously. The action of chinoline upon the vaso-motor nerves and centres has already been discussed. I conclude the study of the action of the drug upon the temperature by referring to the above three experiments, which show an average reduction of the temperature of 3.06° C., as sufficient proof of the depressant action of chinoline upon the temperature.

This result corresponds with the report in the *Boston Med. and Surg. Journal* for March 30, 1882, where chinoline is claimed to be a powerful antipyretic, as well, also, as with the report of the meagre investigations of Drs. Bioch and Loimann, quoted in vol. xxxvi. of *N. Y. Medical Journal.*

It has also been claimed that chinoline is a powerful antizymotic.* The following experiments were made upon this action of the drug:

Experiment 113.—Five specimens of fresh milk were obtained from as many different sources. Each specimen was divided into two parts, and treated as follows:

Normal.							
A	A′	was	made	a ten	per cent.	solution	of chinoline.
B	B′	"	"	five	"	"	"
C	C′	"	"	three	"	"	"
D	D′	"	"	two	"	"	"
E	E′	"	"	one	"	"	"

A, B, C, D, and E had all begun to ferment, and were abounding in bacteria twelve hours after the beginning of the experiment. E′ showed a *very few* bacteria after thirty-six hours only, while A′, B′, C′, and D′ were unaffected after fifty-six hours. This experiment was twice repeated with the same results, all the conditions being the same.

Experiment 114 was made in a similar manner with urine. The one per cent. solution of chinoline in urine did not show any bacteria or any signs of decomposition till forty-eight hours after the normal urine had become "noisome." The two per cent. solution maintained its integrity five days longer, while the three per cent. solution showed no live bacteria after three weeks' free exposure to laboratory air, though there were some dead vibrios and rods present. These experiments also were repeated under the same conditions and with the same results three times.†

In the experiments upon the decomposition of blood it has been found after eight trials that anything less than a four per cent. solution of chinoline, though delaying the decomposition, does not prevent it. These experiments agree with the results reported by the observers above noted, save in one respect, namely, that it has been shown in the experiments upon milk that a two per cent. solution of the drug simply defers the fermentation; while a *three* per cent. solution *prevents* the fermentation. I conclude, then, that chinoline is a powerful antizymotic, a three per cent. solution preventing fermentation of milk and the presence of bacteria; a four per cent. solution preventing the decomposition of blood.

CONCLUSIONS.

1. Chinoline tartrate is a powerful agent, producing death by asphyxia.

2. The drug increases the force and fre-

* *Southern Practitioner*, April, 1882; *Boston Med. and Surg. Journ.*, March 30, 1882; Burnett, in *N. Y. Med. Journ.*, vol. xxxvi., 1882; Donatte, in his paper on Therapeutic Action of Chinoline; R. v. Jacksch, quoted in *Centralblatt f. d. Med. Wissen.*, No. 45, 1881; *Wiener Anzeiger*, p. 69, 1880.

† In the last experiment upon the urine a ten per cent. solution of chinoline in urine had caught a small fly and drowned it. The solution being kept some three months, it was noticed that the fly became enveloped in a cloud of flocculent substance, which constantly increased, and which on microscopical examination proved to be the Achyla of botanists.

quency of the respirations by stimulating the vagus roots in the lung.

3. It paralyzes respiration finally by a secondary depressant action upon the respiratory centre.

4. It does not cause convulsions.

5. It lessens and finally abolishes reflex action by a direct action upon the cord, and by a slight action upon the muscles and nerves.

6. It diminishes or abolishes muscular contractility respectively when applied through the circulation or directly.

7. It coagulates myosin and albumen.

8. It causes insalivation by paralysis of the secretory fibres of the chorda tympani; increases the flow of bile; has no action upon the spleen.

9. It lowers blood-pressure by paralyzing the vaso-motor centres and by a direct depressant action upon the heart-muscle.

10. It diminishes the pulse-rate by direct action upon the heart.

11. It lowers the temperature by increasing the loss of heat.

12. It is a powerful antiseptic; and, finally,

13. Its paths of elimination are not known.

307 North 19th Sth., Philadelphia,
May 16, 1885.

A NEW METHOD OF GIVING A BATH IN TYPHOID FEVER.

By H. C. Wood, M.D.

As is well known, the great difficulty in the use of the bath in fevers is the trouble which is involved in moving the patient in and out of the bath-tub. The following simple device will in great part remedy this trouble and also save the necessity of providing a portable bath-tub. The canvas of an ordinary bed-cot is to be made three or four inches wider than it is ordinarily arranged, and a broad board nailed at each end so as to hold the cot permanently open and project above it several inches in the form of a head- or foot-board. This cot is then arranged alongside of the bed of the patient so as to be on a level with the bed and at the same time firm. Over it is spread an india-rubber cloth sufficiently large to cover it entirely and to fall above and below over the head- and foot-board. The patient, wrapped in a sheet, is then slipped on to the cot; of course the canvas sags down, and when water is poured over the sheet the man lies half immersed in a pool. If the attendant is provided with two tubs, one containing water and one empty, and also with a large bathing-sponge, the water in this pool heated by the body can be removed by means of the sponge, and fresh cold water soused over the body enveloped in the sheet. In this way the water lying continually between the sheet and the body as well as saturating the sheet so envelops the person that the effect of a cold bath can be achieved, and I have seen very rapid reduction of obstinate high temperatures. If the bed upon which the patient lies be a very wide one, instead of a cot being used the mattress can be so arranged on one side as to sag down sufficiently to form a hollow for the pool, and in this way the bath be given.

I notice that Stephan, of St. Petersburg, affirms that the application of ice-bags over the super-clavicular regions is sufficient to control the temperature in fever, owing to the fact that the cold is brought into close contact with much of the blood of the body by the large superficial veins of the neck. I have had no experience, however, of this method of reducing temperature, but it is worthy of a trial; especially as it seems to be safer to reduce temperature in low fever by external cold than by our at present known depressant antipyretic drugs.

SALICYLATE OF SODIUM IN DIABETES MELLITUS.

By Thomas J. Yarrow, M.D., Philadelphia.

The object of this communication is to call the attention of the profession to the administration of salicylate of sodium in diabetes mellitus. During the past year I have treated four cases of diabetes with this remedy, with very gratifying results.

Case I.—I was called to see Mr. S., aged 63 years, in May, 1884. He had been suffering for several months from diabetes: his condition was one of great extremity; confined to his bed, with great emaciation and inability to take food; very great thirst. He was excreting fourteen pints of urine per day, heavily loaded with sugar. He was placed upon the salicylate of sodium, 10-grain doses, four times a day; skim-milk diet. Two days afterwards he had two large hemorrhages from the bowels which brought him very near to death; however, he rallied, and from that

time made a steady improvement. He passed the months of July and August at Waukesha, Wis., and returned in September, having gained flesh and strength. Upon testing his urine it was found entirely free from sugar. It may be of interest to mention that at this time, as the urine was both normal in quantity and free from sugar, he was placed upon the arsenite of bromine, as recommended by Professor Austin Flint, Jr., with the unhappy result that the sugar immediately appeared in the urine. It was then abandoned, and he continued to take as before the salicylate of sodium. He has been able to attend to an important business since last November, and seems entirely well, although he still avoids farinaceous and other improper diet.

CASE II.—Mr. W., aged 65 years, consulted me in December, 1884. Upon examination it was found that he had been losing flesh for several months, and was passing about six pints of urine daily, which contained a considerable amount of sugar. His digestion was greatly impaired; strength failing; great dejection of spirits, and complained very greatly of extreme weakness in his legs. Placed upon salicylate of sodium, 10 grains, four times a day, milk diet, gradually varied by the addition of meat and eggs. He continued steadily to improve, and at the end of three weeks his urine was free from sugar. He is now taking food without special restriction and remains well.

CASE III.—Mr. M., having been examined for life insurance, and rejected by reason of having saccharine urine, consulted me in January, 1885. He felt entirely well, and manifested no evidence of disease other than the presence of sugar in the urine. Had no increase of thirst. Upon properly restricted diet and the administration of the salicylate of sodium, at the end of three months the sugar entirely disappeared. He is still rigidly careful in the matter of diet.

CASE IV.—Mr. N., after profound grief at the illness of a daughter, in December, 1884, consulted me for extreme thirst; believing it to be ridiculous, however, that a man so well as himself in every particular should mention this "trifling symptom" to his doctor. Examination of the urine revealed the presence of an enormous quantity of sugar, and upon the use of salicylate of sodium, same doses as mentioned above, his urine is now entirely free of sugar, although he confesses that during the last six weeks he has abandoned every restraint upon his appetite.

1335 N. BROAD ST.

REMEDIES EMPLOYED IN TYPHOID FEVER.

BY W. G. KEMPER, M.D., OMAHA, NEB.

THE newest remedy recommended in typhoid and other fevers is *antipyrine*, which was first prepared by Dr. Knorr, of Erlangen, and first introduced by Dr. Filehne of the same city. As its name implies, it is an antipyretic. In 15- to 30-grain doses it quickly reduces the temperature, with the accompanying rapid pulse and respiration. The tongue becomes moist and delirium ceases. The only unfavorable results noticed have been the production of an eruption, and the occasional vomiting following its use. The remedy is patented in Germany.

Dr. Filehne has also introduced *kairine* to the profession. This is a powerful antipyretic, which in a few hours reduces the temperature to normal. It acts very rapidly, but its effects quickly cease, and the temperature as rapidly rises. The usual dose administered is 10 grains. Cases have been reported in which the effects of the remedy were dangerous to life.

Dr. G. Mangazzini had good results when *antipyrine* and *kairine* were combined. The temperature was sooner reduced, and no evil effects were noticed.

The German "specific treatment" was first recommended by Liebermeister, Traube, and others, and is still regarded with favor by many. It consists in the administration of a dose of 10 grains of *calomel* the first day, and for three or four days after 8 grains per day. These large doses lower the fever, and are said to shorten the duration and lessen the mortality of the disease.

Dr. Kolb has treated one hundred cases with *mercurial inunctions*. Ninety grains of the ointment are rubbed into various parts of the body each day for six days. Internally, at first a few pills of *calomel* and *opium* are given. In ten days eighty per cent. of his patients were free from fever.

Iodine is said to be followed with good results. The fever is not changed from the ordinary course, but the death-rate is lower. Dr. Bartholow uses

℞ Tr. iodin., ʒii;
Ac. carbol., ʒj. M.
S.—1 to 3 drops three times daily.

Dr. N. S. Davis has recommended the following, "not as a specific, but simply as an alterant and antiseptic":

℞ Iodin., gr. viii;
Potass. iodid., gr. xxx;
Aq. dest., ʒiss. M.

S.—12 to 15 minims in two tablespoonfuls of sweetened water every four hours for the first three or four days; then every six hours until indications of convalescence appear.

Cold water was first employed in the treatment of typhoid fever by Dr. James Currie, but later fell into disuse. Since 1868, Dr. Brand, of Stettin, revived the practice, and it is again much employed. Various methods are in use; all are effective in reducing the temperature,—the cold bath in the strong class of patients, cold affusions and cold sponging in the feeble. Cold packs are difficult to apply, but are well borne, and applicable in the treatment of children. The cold-water treatment is contraindicated in hemorrhage of the bowels, cold extremities, and organic diseases of the heart. Dr. Negretto reduces the temperature by *rectal injections* of water from 50° to 60° F. The pulse and respiration are lowered. Abdominal pains and rigors are sometimes produced.

Quinine is a very popular remedy, but it is useless in small doses. From 25 to 50 grains are necessary to reduce the temperature notably. As the effects pass off the temperature gradually rises again, and in twenty-four hours reaches its original height. Evil effects seldom follow. Antipyrine and other antipyretics are taking the place of quinine.

Salicylate of sodium is used largely. It rapidly reduces the temperature in large doses (gr. 50 to 100 in twenty-four hours). The remedy unfavorably influences the kidneys, stomach, and circulation.

Dr. Desplats reports a number of cases treated with *salicylate of bismuth* with good results. From 75 to 90 grains per day of this salt reduced the temperature five degrees. When the drug was administered for several days, the reduction was permanent. In certain cases it seemed to have an abortive effect on the disease.

Digitalis is often used as an antipyretic. In doses of 10 to 20 grains, followed by a full dose of quinine, the temperature is often reduced to normal, even in cases in which quinine alone has no effect. It should never be given in cases in which the action of the heart is feeble. The mortality is said to be much lower than in cases treated under the expectant plan.

Rothe claimed excellent results from hourly doses of infusion of digitalis with *iodine* and *aconite* during the first days, also using quinine and permanent applications of cold.

Prof. Dickson has highly spoken of *veratrum viride* in typhoid fever. Doses of 40 drops are given with the best effects.

Dr. A. L. Foreman believes that *jaborandi* will abort an attack of typhoid fever. He has succeeded in ten or more cases in cutting short the disease. He gives ½-drachm doses of the fluid extract in a little hot water every half-hour until four doses are taken. Nausea is controlled with a little hot coffee. Copious diaphoresis follows. Later he gives quinine, alternating with the remedy. The editor of the *Virginia Medical Monthly*, also, has had good results from the medicine.

Dr. Guillassee, of the French navy, has administered *coffee* with remarkable success. Three teaspoonfuls are given to adults every two hours, alternating with small doses of claret or Burgundy. Good results are apparent immediately.

Dr. Daunt, of Brazil, highly recommends *chlorohydrate of perevina*, an extract from the bark of Geissospermum vellosi, as a substitute for quinine in typhoid fever. Dose, 12 to 24 grains.

Dr. Pepper advocates the use of 1/6 to ¼ grain of *silver nitrate*. He gives *belladonna* if there is constipation, *opium* if there is diarrhœa. Complications rarely occur. His mortality is three per cent.

Dr. Amat, of the French army, reports good results obtained in adynamic cases from the use of *phenic camphor:*

℞ Camphor., gr. lxxx;
Ac. carbol., gr. xxxviii;
Alcohol, ʒv;
Aq. puræ, ʒxxvii.

He uses this by stomach and per rectum.

Dr. Warfninge, of Stockholm, uses *8-grain doses* of *carbolic acid* twice daily in typhoid fever, generally in solution per rectum. He reports that the temperature is reduced, and profuse perspiration follows, leaving the patient comfortable.

Prof. Da Costa has found *thymol* to be as effective, and not as disagreeable, as carbolic acid in typhoid fever as an antipyretic. Dose, ½ to 2 grains in solution.

Bisulphide of carbon has been recommended by Dujardin-Beaumetz as an antiferment and antiputrescent. For medicinal use it should be purified by agitation with metallic mercury until it no longer gives a black precipitate. The solution can be made by shaking the sulphide with water.

Van Burg supports the theory of the curative action of *sulphate of copper* as an anti-

septic in typhoid fever on the immunity of the coppersmiths from cholera. Four-grain doses are well borne, either per stomach or per rectum. The diarrhœa subsides, and neither nausea nor vomiting is produced.

Cassagne used *ergot* in eighty-two cases. His mortality was about 3.7 per cent. He administered the drug in fresh powder, 30 to 45 grains once daily for eight or ten days. Gastric irritability contraindicated its use, but the addition of sodium bicarbonate proved of value in checking the vomiting. Hemorrhage was controlled by the drug.

A French physician recommended hypodermic injections of ether in the adynamic forms of the disease. Twenty drops twice daily aroused the patient and quieted the delirium.

The *expectant* or *symptomatic* treatment is the one commonly pursued at the present time. The patient is carefully nursed, and the complications treated as they occur. Especial attention is given to the diet.

SEDUM ACRE IN DIPHTHERIA.

By P. O. Wagener, M.D., Sand Beach, Mich.

THE article on the therapeutic uses of sedum acre in a recent number of the Therapeutic Gazette is noteworthy, as calling attention to the use of what seems to be a reliable drug in the treatment of diphtheria; and although Dr. Duval may really deserve the credit of having introduced this drug, its use in diphtheria and membranous croup is not confined to Madrid, as I know that it has been used in the treatment of these diseases for a number of years in several parts of Europe. Nevertheless, Dr. Duval may deserve the credit of being the discoverer, as I cannot find any article which definitely establishes by whom it was first employed. I was first made aware of its great value in the treatment of membranous croup and of diphtheria by Dr. Meyer, of Trèves, in 1871. Dr. Meyer had used the wallpepper (mauerpfeffer) for more than six years previously, and always with the most gratifying results. A few years later Dr. Urban, of the Netherlands, recommended it in a journal published at Stavelot, Belgium, and claimed that he had treated several hundred cases with it, with but few deaths. I have since then used it in a large number of cases, and can say that it deserves all that Dr. Duval wrote about it. I would not, however, recommend the mode of administration employed by Dr. Duval, and if he has used the drug extensively he must be aware that its employment, like that of most all other valuable drugs, is not free from certain drawbacks. My experience, however, has taught me a better method of employment; one in which the real value of the drug is more rapidly developed, and in which its disadvantages are nearly entirely overcome. The decoction, as used by Dr. Duval, is very liable to cause gastritis; at least, such has been my experience in nearly one-third of all cases. In some cases its use has been followed by catarrh of the lungs, as I experienced in my own case. I took two tablespoonfuls of a decoction three times a day for six days. On the fourth day symptoms of catarrh of the right lung appeared, and increased rapidly until the drug was discontinued.

Its value in diphtheria does not depend upon any specific property for the cure of this disease, but upon its power of loosening the false membrane, and so preventing death from suffocation. Sedum acre is consequently valueless in the first stage of this disease, and should only be employed when the false membrane has been developed. The effects of its local application will then be most satisfactory. For the last three years I have employed the following formula:

> Fld. ext. sedum acre, f ℥i;
> Sprts. turpentine,
> Lactic acid,
> Fld. ext. aconite, aa f ʒii. M.

One application should be made with this mixture with a brush every three minutes for twenty minutes, and if by this time vomiting has not commenced, a glass of warm water with a teaspoonful of lard in it will cause copious emesis, and the membrane will be entirely expelled. The throat should then be carefully examined, and if there are any bleeding points, as is apt to be the case if the sedum acre has been used early, each spot should be touched with a little Monsel's solution. I have never seen ulceration of the mucous membrane follow this treatment. When sedum acre is used and the membrane once removed, I have never seen any redevelopment of membrane. I believe by its use tracheotomy in croup and diphtheria may be entirely dispensed with.

NITRO-GLYCERIN, A SUBSTITUTE FOR ALCOHOLIC REMEDIES.

By Joseph B. Burroughs, M.D., Manchester, N. Y.

SEVERAL years ago, while using glonoine in a case of angina pectoris, and watching its wonderful stimulating properties over the heart and general circulation, the idea occurred to me that it might in many cases be employed where the use of alcohol would seem a necessity; in fact, to substitute it for alcoholic remedies in the treatment of many diseases. At first I was unwilling to rely wholly upon it in severe cases, but as I became more acquainted with its effects I realized we possessed in it a heart-stimulant far superior to alcohol: 1st, in the minute quantity required, 1 to 2 drops of a one per cent. solution being equal to an ounce or more of brandy; 2d, it is tasteless, colorless, and nearly odorless; 3d, rapidity of its effects; 4th, and greatest of all, in that there is no possibility of creating an appetite for stimulants.

Alcohol, in its effects on the body, is classed with chloroform and ether. All three produce first a period of excitement, followed by a stage of unconsciousness. In chloroform and ether the stage of unconsciousness is soon reached, hence they are used to produce this result. With alcohol the first stage is of longer duration, and the second stage is not reached unless large quantities are taken, hence it is used principally for its stimulating effect on the heart and general circulation. Nitro-glycerin possessing in a more marked degree this same stimulating power, may be used whenever this result is desired by the physician and brandy would seem imperative. I have found it of great value in nausea and faintness during minor surgical operations, severe case of laudanum-poisoning, headache in anæmic patient, hysterical aphonia, asthma, to prevent *petit mal*, collapse in typhoid fever, shock after an accident, and many others where a stimulant was indicated.

The following are some of the more marked cases of its beneficial effect, where brandy might have been used:

Opium-Poisoning.—Case I.—Elderly lady by mistake swallowed a large quantity of laudanum. In fifteen to twenty minutes, at which time I arrived, she was unconscious, jaws firmly set, respiration very feeble (do not remember how many), pulse at the wrist hardly discernible, and later not to be felt save in the carotids, body and limbs growing cold. By means of hypodermic injections of atropine solution the respirations were increased in strength, but the heart continued to grow more feeble. I discovered the lady possessed mitral insufficiency,—of twelve years' standing as I afterwards learned,—which accounted for the alarming effect of the opium. Repeated hypodermic injections of brandy were then resorted to, but with no change in the pulse. After four hours I dropped between her parted lips three drops of a one per cent. solution of glonoine, the largest amount I ever gave for a first dose. In less than fifteen minutes the pulse at the wrist was bounding, full, and regular. In less than an hour more she was drinking strong coffee, and answering "yes" and "no" to questions put to her.

Cases II. and III.—*hysterical aphonia*, in a man of 40 and a woman of 28—are so near alike, a description of one will answer for both. Woman, married, is suddenly attacked with terrible pain and pressure over heart. Respiration becomes very rapid, 60 to 80, and shallow, pulse feeble, and 40 to 48, every muscle rigid, unable to speak. Usually remains in this condition for hours, as she did the first time I saw her. The second time I was called I dropped one drop of glonoine between her lips, and in ten to fifteen minutes heart was beating full and strong, thus relieving the engorged lungs; the respiration became deep and strong; all other symptoms quickly disappeared.

Case IV. was somewhat similar, except pulse was 200 (I counted the pulsations by dotting a paper with a pencil for every beat for a minute and then counting the dots), respiration not so short, but rather a sense of suffocation. Glonoine had the same effect as in Cases II. and III.

Case V.—Collapse of typhoid fever. The fever, after a severe course, left on the twenty-third day; after a week of convalescence, the patient was attacked with persistent hiccough. Next day his fever returned, ran rapidly up to 104.5°, when he vomited and purged large quantities of bile. For a time he was wild, but changed to low muttering; pulse became very feeble and remittent. Ordered brandy and milk, but the first teaspoonful he took he spit it out with a cry that "he was on fire," and refused to take any more. I then gave small doses of glonoine, often repeated, which, with other remedies, restored him to his former condition in a day or so, and ultimately to health.

Hardly a day but I use it where brandy might be given. Thus in a recent case, a

young man nearly tore two fingers from his hand while at work. While dressing it he became so faint and nauseated I had to cease. Here brandy or ammonia was certainly the thing to use, but *one* drop of nitro-glycerin in a few minutes sent the blood rushing to his head, and I finished my task with no further trouble.

If nitro-glycerin proves a substitute for alcohol, as physicians may soon prove for themselves, the profession may become more thorough advocates of total abstinence than heretofore, as many have felt that, in some cases at least, spirits were a necessity.

OLEUM GAULTHERIA AND GALVANIC ELECTRICITY IN CHRONIC CATARRHAL DEAFNESS.

By A. N. Shotwell, M.D., Mt. Clemens, Mich.

CONSIDERING the rapid increase of this troublesome disease, and the unsatisfactoriness of the ordinary treatment, we should look forward without prejudice to any new device which will mitigate this trouble.

I will take for the subject of this sketch three cases of catarrhal deafness, all of different ages and conditions:

Case I.—A man, æt. 30, came to my office complaining of loss of hearing, with continuous buzzing in the ears, which was sometimes very severe. On examination I found follicular pharyngitis in an aggravated form, with a good deal of expectoration. On March 25 he could only hear the tick of a watch on left side eight and one-quarter inches from the head. I commenced by employing astringent sprays in the throat and nose and equal parts of ext. hamamelis and glycerin.

After using Dobell's solution to cleanse the membrane, and at different times argenti nitrat., gr. xx to ℥i of water, applied with a probe to the enlarged follicles, I commenced with galvanic electricity passed through the ears. On April 10 I tested the ears with the same watch under the same conditions, and found that the hearing had increased from eight and one-quarter to nineteen inches. I continued the use of electricity up to April 29, when the patient complained of return of buzzing and could not hear quite as well, when I commenced to use one part of ol. gaultheriæ with three of ol. olivæ into ears by dipping a small piece of absorbent cotton into it and leaving it in overnight, when the buzzing stopped. On May 21 I again tested hearing, and found it had increased to twenty-six inches; again, on May 26, to twenty-nine inches, and the patient is now about as well as ever.

Case II., March 15.—Lady, æt. 22, complained of deafness; had been treated at various times by different aurists without success. In left ear could only hear the tick of a watch four and one-half inches; right, eight and one-quarter inches. In this case I also used electricity, passing the current through both ears, and on March 25 the watch could be heard by the left ear at six and one-quarter inches, right, twelve inches; April 12, left, nine and one-quarter, right, seventeen inches. April 21 the patient complained of soreness in external ear on left side, and her hearing was reduced to five inches; right side, eighteen inches. Stopped electricity one week, when ear commenced to improve, and I began to use ol. gaultheriæ as above and battery every other day, when there was a gradual improvement from day to day. May 26, she hears the watch in the right ear at twenty-seven inches and in the left at eight inches. She says the left ear has been poor from some sickness of childhood, but there is no perforation of membrane, only a white metallic lustre, with slight contraction.

Case III., April 8.—Child, æt. 8. Father said child was getting very deaf; found membrana tympani of a metallic lustre, the tonsils very much enlarged, with nose almost entirely occluded; child of medium health and attending school. I tested hearing April 8, when she could only hear the tick of a watch three and one-half inches with right ear and three inches with left. I then began the use of the galvanic current, and on April 25, right, three and three-quarters, left, six inches; May 5, right, six, left, nine inches; May 13, right, twelve, left, eighteen inches; May 18, right, twenty-eight, left, twenty-four inches. On May 1 I commenced the use of the ol. gaultheriæ, and the case commenced to improve at once.

In each of these three cases I used the double ear electrodes as made by McIntosh, of Chicago, using McIntosh battery, mild current, just short of any burning. I use from two to four cells, ordinarily three, and electrodes as near of a length as I can get them, and use negative with ear electrodes, and positive on the mastoid process, for five minutes on each side, with small sponges in both ears.

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Leading Articles.

MUSK.

A VERY important and almost entirely neglected remedy in adynamic febrile conditions is musk. Many years ago Trousseau very earnestly called the attention of the profession to the value of the remedy in the treatment of adynamic pneumonia of drunkards, and the wonderful effects which I have seen in such cases led me to employ the remedy in typhoid fever. Thus, in a case of an old man over 70 years of age, who for twenty years had been perpetually intoxicated, who was wildly delirious, fighting furiously so that he had to be tied in bed, a dose of musk would produce calm lasting for six hours, when the old delirium would return. The reason that musk has fallen so largely into disuse is probably because its expensiveness has led to its being employed in too small doses. What the proper dose of pure musk is we have no idea, because there is no reason for believing that we ever see this drug in a state even approximating purity; but of the best commercial article there is no use in exhibiting less than 10 grains. It is best administered by rectal injection, the dose being suspended in an ounce of mucilage of acacia, to which is added 10 to 20 drops of laudanum, in order to secure its retention. The indication to meet which musk is given in typhoid fever is a sudden collapse. Perhaps the use of the drug can best be illustrated by briefly speaking of two cases in which its effects were very marvellous. In the one case I was called in consultation to see a young woman in the fourth week of typhoid fever. I found her with a markedly sub-normal temperature, with a pulse that was rising and so rapid and feeble as scarcely to be counted, and with a skin bathed in cold sweat. The expression of the countenance was Hippocratic, the extremities icy cold, and as she lay upon her side there was perpetual retching and regurgitation without effort. No medicine or food had remained upon the stomach for some hours. I said, "What is the use of calling me to see this case? she will be dead in a few moments;" but suggested, after some hesitation, a trial of the musk injections. I did not hear further from this case for some months, until, incidentally speaking to the gentleman who had called me to consult upon the typhoid fever case which he had lost, he informed me that the woman had not died, but under the influence of the musk her skin had dried, her temperature risen, the pulse gained in force and lost in frequency, and the stomach become retentive, so that the small doses of pure brandy given were kept down, and finally the case progressed well until convalescence. In a contrasting case with this, a boy, aged 18, was in the fifth week of an exceedingly violent attack of typhoid fever; the temperature, which had already become irregular in its rhythm, one day swung violently upwards: it was 105½° F. and still rising. The lad was put in the ice-water pack; this reduced the temperature in twenty minutes to 102° F. He was then taken out, but half an hour afterwards the temperature had again risen above 105° F. The renewal of the pack caused again an exceedingly rapid fall, showing that the resistive vital forces were very feeble. The second time the temperature rose towards 106° a few moments after the boy was taken out of the pack, and again it was reduced by the pack; again it rose as rapidly as before, and there seemed no way of controlling the fever save only by the perpetual use of cold water, which was of course out of the question. The rise of temperature, it should be stated, was accompanied by great nervous disturbance and by delirium; there was excessive anxiety, the fear of impending death, perpetual restlessness, almost convulsive in its tossings. A full dose of musk was or-

dered, and in the course of twenty minutes the temperature had fallen below 103° F., the pulse had gained greatly in strength, and the nervous restlessness was completely abated. The symptoms in these two cases were seemingly antagonistic, and yet they rested upon the same condition of vital exhaustion. In the one case the vaso-motor centres had given out, and there was a corresponding fall of bodily temperature. In the other case the nervous centre, which inhibits the production of animal heat, entirely lost its power, and its sudden paralysis was followed by immense rise in the bodily temperature. The stimulant action of the musk had in either case the effect to restore power to the exhausted nerve-centres. The great indication for the use of musk is such sudden giving out of the nervous centres which preside over organic life. In the last case mentioned these paroxysms of exhaustion were sometimes marked chiefly by peculiar rigors simulating those of an intense and very adynamic pyæmia. Nothing would control these rigors so well as musk.

In the employment of musk in adynamic conditions of the body, it must be remembered that it is one of those remedies that rapidly loses its power by repeated employment; its use, therefore, must be economized, and the injections ought not to be repeated oftener than is necessary, or indeed to be given until demanded by the pressure of urgent necessity.

H. C. W.

THERMIC FEVER OF INFANTS, OR SO-CALLED SUMMER COMPLAINT.

THE subject of the treatment of sunstroke or thermic fever is so hackneyed that we do not propose to inflict any lengthened discussion of it upon our readers. Suffice it to state that, as almost every well-informed person ought to know, no time should be lost in any case of sunstroke in sousing the patient in cold water, putting him in a cold bath, rubbing him with ice, or in some similar way reducing his temperature. The matter of minutes in this case being one of life and death, no time should be lost in waiting for the physician. The only danger is in the mistaking heat-exhaustion for true sunstroke, and this mistake can be avoided by simply feeling the surface of the body. If this is cold the subject is suffering from heat-exhaustion, and should be put in a hot bath. If it is intensely hot, the patient is suffering from sunstroke.

Not yet overwritten, however, are the various febrile conditions which are really mild forms of thermic fever, but which are, we believe, not yet recognized as such by the very large proportion of the American medical profession. Many years ago Dr. Moorhead, in his classical work on the diseases of India, under the name of "Ardent Continued Fever," described that mild form of the disorder which was so ably pictured in the March number of this journal by Dr. John Guitéras, as he has seen it at Key West, where it has usually been diagnosticated as typhoid fever. This affection is probably very common in the southern portions of the United States, but is rare in our Northern States, because the heat is less continued.

It is notorious that in our Northern cities the infant mortality rises most extraordinarily and most abruptly upon the occurrence of a very hot spell of weather, such mortality being due to the so-called entero-colitis, the symptoms of which may be summed up as high fever, dry tongue and mouth, rapid pulse and respiration, intense thirst and vomiting, purging of greenish watery fæcal or serous matters with undigested particles of food, and more or less apparent evidences of cerebral disturbance, such as insomnia, headache, contracted pupils, delirium, and, finally, coma. In some of these cases the bodily temperature of the little sufferer rises to a point almost reaching the maximum attained in the sunstroke of adults, and we well remember how we used to be taught to explain to the mothers under these circumstances that the disease had gone to the child's head and was hopeless. To Dr. C. Comegys, of Cincinnati, belongs the great credit of having first called attention to the fact that these cases are to be relieved, not by calomel or astringents or any other drug which relieves inflammation of the intestines, but by external use of cold water. They are, in reality, forms of thermic fever, the intestinal condition being no more a primary disease than is the coma of adult sunstroke a primary condition; if this fact were clearly recognized by our practitioners of medicine, the mortality rate in our large cities among children during hot spells would be enormously reduced. Dr. Comegys practised cold affusions, but we do not think these have any advantage over the cold bath, and are more trouble. The mothers accustomed to the powders, pills, and nauseous mixtures of the older physicians usually object to the withdrawal of the medicine, but especially are they terrified by the use of the

cold baths, and the infants themselves are usually prone at first to protest with what little physical strength they have against the plunge into the cold water; but when it has been once seen that the child that has been tossing for nights, moaning and sleepless, becomes quiet, and on being taken out of the bath falls into a peaceful slumber, the opposition of the mother soon becomes turned into a grateful confidence. In our own experience even nursing babes soon recognize instinctively the effect of the bath, and older children become eager for it. There is, therefore, after the first essay, usually no trouble in carrying out the plan of treatment; indeed, not rarely care must be exercised to see that the bath be given not too frequently. It must be remembered that the object of the bath is to reduce the temperature of the child, and that, therefore, unless the bathing is done with sufficient frequency to keep down the temperature it will not be efficacious; but, on the other hand, it must not be forgotten that it is very possible to overdo the treatment. The thermometer should be freely employed, and the practitioner be guided by its warnings. If two baths in the twenty-four hours should keep the temperature near normal, two is all that is necessary. If eight baths are required, eight should be given.

NOTE ON THE TREATMENT OF HEMORRHOIDS.

IN cases of severe hemorrhoids no medicinal treatment is of avail, and very many hours of unnecessary suffering and ill health are often endured which ought to have been saved by surgical operation. In mild cases of hemorrhoids sufficient relief is often afforded by medicinal treatment. The principles governing such therapy are as well known to our readers as to ourselves. We do not propose to discuss them, but to call attention to the fact, which does not seem to be universally known, that in a very large proportion of these mild cases chlorate of potassium is much more efficient as a local application than are the more usually employed astringents. There is little doubt that in many of these cases the hemorrhoids are really the expression of an inflamed mucous membrane, and the chlorate of potassium is as efficient as it is in diseases of the inlet of the alimentary canal; indeed, it is even more efficient, because more prolonged contact is possible. Half an ounce to an ounce of the saturated solution of the chlorate, to which has been added 5 or 10 drops of laudanum, is to be thrown into the rectum morning and evening, and retained. Of course, the usual precautions in regard to keeping the bowels free are to be taken.

WARBURG'S TINCTURE.

IN the discussion of the treatment of hemorrhagic malarial fever, which recently took place in New Orleans, there seemed to be a wide-spread belief among those familiar with the disease that quinine, as ordinarily given, is of little value. It is a very curious evidence of conservatism that Warburg's tincture, which has been used with such extraordinary results in India in the treatment of malarial fevers of a malignant type, cannot obtain a fair trial in our Southern States. The testimony to its value has been very extraordinary, and we notice in the twenty-seventh issue of the Report of the China Imperial Maritime Customs, just received, that Dr. B. S. Ringer, of Amoy, reports a case of intermittent fever contracted at Hong-Kong, in which quinine and salicylate of sodium had been repeatedly tried without effect, and arsenic and aloes had also been essayed in vain, but in which the disease rapidly yielded to the administration of 2 drachms of the Warburg's tincture three times a day. The case had continued for many weeks, but under the influence of the Warburg's tincture the temperature fell three degrees in the course of a few days, and on the tenth day after use a normal temperature was recorded for the first time for thirty-two days. It will be noted that the method in which Dr. Ringer employed the Warburg's tincture is different from that commonly practised. As this tincture contains quinine, it has been alleged that the remedy is only quinine concealed in a farrago of inert substances for the purposes of mystification. The importance of the subject justifies us in noting at length the words of Dr. B. S. Ringer in answer to this.

"I have treated remittent fevers of every degree of severity, contracted in the jungles of the Deccan and Mysore, at the base of mountain ranges in India, on the Coromandel coast, in the pestilential highlands of the northern division of the Madras Presidency, in the malarial rivers of China, and in men brought to this (Netley) hospital from the swamps of the Gold Coast, and I affirm that I have never seen quinine when given alone

act in the manner characteristic of this tincture; and although I yield to no one in my high opinion of the inestimable value of quinine, I have never seen a single dose of it given alone, to the extent of 9½ grains, suffice to arrest an exacerbation of remittent fever, much less prevent its recurrence, while nothing is more common than to see the same quantity of the alkaloid in Warburg's tincture bring about both results."

Dr. Ringer states that the tincture has usually been administered by him in the following manner:

"One-half ounce (half of a bottle) is given alone, without dilution, after the bowels have been evacuated by any convenient purgative, all drink being withheld. In three hours the other half of the bottle is administered in the same way. Soon afterward, particularly in hot climates, profuse but seldom exhausting perspiration is produced. This has a strong aromatic odor, which I have often detected about the patient and his room the following day. With this there is a rapid decline of temperature, immediate abatement of frontal headache, in a word, complete defervescence, and it seldom happens that a second bottle is required; if so, the dose must be repeated as above. In very adynamic cases, if the sweating threatens to prove exhausting, nourishment in the shape of beef-tea, with the addition of Liebig's extract, and some wine or brandy of good quality, may be required."

Owing to the complexity of the original formula of Warburg's tincture, and the expensiveness and apparent inertness of certain of the ingredients, there is a strong temptation on the part of manufacturers to depart from said formula, but it must be remembered that we do not know at all to which of its ingredients this polypharmaceutical owes its virtue. It is, therefore, entirely possible in any case that a drug left out is the important one. No practitioner has a right to consider that he has made a fair trial of the Warburg's tincture unless it has been prepared by a pharmaceutist of known reputation, whose word has been given that he has in all respects conformed to the original instructions of Dr. Warburg.

ASEPTOL.

ANNEESSEUS recently described a new preparation under the name of "aseptol," which in its molecular structure closely approximates salicylic acid (*Pharm. Zeitschrift für Russland*, No. 12, 1885). It is a viscid, reddish liquid, of a specific gravity of 1.450, has an odor like carbolic acid, but in his judgment surpasses both carbolic and salicylic acids in antiseptic virtues. Besides, it has the advantage of ready solubility in any proportion, and of not being poisonous; it is hence particularly eligible for internal and surgical purposes. As antiseptic internal medication meets the etiological indications of all zymotic diseases and in the near future no doubt will occupy the therapeutist, Anneesseus lays particular stress upon aseptol as the internal antiseptic *par excellence*. Merck, of Darmstadt, prepared the specimen used for the following experiments of Weigelin, intended to prove its antiseptic properties as compared with carbolic and salicylic acids. Of two equal pieces of meat, one of which was exposed to the air in a one per cent. solution of carbolic acid, the other in a one per cent. solution of aseptol, the former kept unchanged (excepting loss of color) for months, while the latter grew turbid after six days, and showed on microscopic inspection countless bacteria. Similar comparative tests made with aseptol and carbolic acid on urine exposed to air spoke equally for the superiority of carbolic acid. These two experiments, then, directly refute Anneesseus's assertion that the new drug surpasses carbolic acid in antiseptic power. Added in a small quantity to eggs, milk, or beer, it did not retard the decomposition or coagulation, while the reverse was the case when salicylic acid was used. Salicylic acid checks, in Weigelin's belief, the formation of bacteria more promptly than carbolic acid. We have, then, to discard all prospects of having in aseptol a new and desirable acquisition of antiseptic remedies.

ON PISCIDIA ERYTHRINA.

THE THERAPEUTIC GAZETTE has repeatedly devoted considerable space to the discussion of this drug; in fact, the first systematical researches concerning its physiological action, conducted by Ott and Nagle, of Philadelphia, in 1881, appeared in this journal, and thence found entrance into the foreign press. Recent observations, both experimental and clinical, having brought out some new and valuable features of the drug, it will be *à propos* to represent our present state of knowledge of it by a complete summary.

The history of piscidia is an interesting one, and bears a striking resemblance to the

therapeutic career of cocaine. Indigenous to neighboring regions of the home of cocaine, piscidia has been known, like the latter, to the natives since time immemorial, while the just appreciation of their great medicinal virtues was reserved to a very recent period. In 1844, Hamilton first called attention to its narcotic properties, but his publication passed unheeded, and probably would have been doomed to oblivion if Sims had not resumed the study. Death overtook this celebrated gynæcologist before he had published a line of his observations on piscidia. Of the succeeding researches, those of Ott and Nagle require special reference. Their principal conclusions were,—

1. Piscidia is a positive narcotic.
2. It does not affect the excitability of motor nerves.
3. It does not affect the peripheral extremities of sensitive nerves.
4. It diminishes reflex action by excitation of the centres of Setschenow.
5. It produces a tetanic state through spinal excitation, and not through paralysis of the centres of Setschenow.
6. It dilates the pupil, which again contracts when asphyxia sets in.
7. It is a sialagogue.
8. It increases cutaneous secretion.
9. It lowers the frequency of the pulse.
10. It increases arterial tension through vaso-motoric stimulation.
11. The heightening of tension is followed by a lowering due to an effect produced on the heart.

Ott himself took a tablespoonful of tea from extract of piscidia and slept soundly for three hours, without experiencing the unpleasant after-effects of opiates. It can be compared best to bromide of potassium, though it also resembles morphine in its stimulating effect upon the vaso-motor nerves.

Firth employed the rind of the plant in several cases of delirium tremens with signal success (*Union Pharmaceutique*).

Scott and MacGrotz gave the tincture in mental affections with best results.

Siefert, of Berlin, states that he used an alcoholic extract prepared from the bark in doses of 25 centigrammes (4 drops) without ever observing any unfavorable symptoms. He failed, however, to observe its sialagogic and sudorific capacity mentioned by Ott. Its advantages were found particularly great in phthisical cases with insomnia caused by pain.

Ford prescribed it successfully in neuralgias (THERAPEUTIC GAZETTE, 1882). He reported two cases of rebellious neuralgia, the pains of which were calmed by piscidia, inducing later sleep and effecting a cure after the sleep had passed off.

Van Lair, of Liège, held that the drug acted directly on the nervous centres, and thus diminished reflex action without affecting the sensitive nerves.

Various practitioners have testified to its successful application in cases of neuralgia, insomnia, and dyspnœa.

In strange opposition to this evidence we have the experience of Wood, who states that in a case of neuralgia the drug had not only no narcotic effects, but caused nausea and stomachic pains.

Landowski, again, is thoroughly convinced of the analgesic and narcotic virtues of the drug, which he tried in six cases of wounded soldiers. Huchard—an unquestionable authority—says he has used piscidia with scarcely a failure, and that he relies on it in the pains of dysmenorrhœa. He prescribes 50 drops of the tincture daily, associated with an equal quantity of viburnum prunifolium. Huchard thinks that the tincture of piscidia is especially successful in the abdominal neuralgias.

Dujardin-Beaumetz has lately also examined into the medicinal worth of the drug and could confirm its alleged usefulness. Hart analyzed the drug chemically last year and extracted its active principle, which he called piscidius.

As to the administration of piscidia, it is not yet possible to inject it hypodermically, as the true alkaloid has not yet been altogether isolated. Three preparations are in existence,—the powder, the tincture, and the fluid extract. The powder is given in a dose of 7 grains, to be taken in a capsule, four times daily. The fluid extract, though, is a far preferable preparation, and may be given in doses of 40 to 50 drops, to be taken in a potion of the following description:

℞ Fl. extr. piscidiæ erythrinæ, ʒiii;
Syr. aur. cort., ʒvi.
M. S.—Take 1 to 3 tablespoonfuls in coffee at morning.

The tincture is given in the same dose, and is no doubt the most eligible of all three preparations. It is usually prescribed by Huchard as follows:

℞ Tr. pisci. erythr.,
Tr. viburn. prunifol., aa gtt. l.

Of the various varieties, the so-called Jamaica dogwood is the most efficient one.

According to the above statements, piscidia

must be accepted as a positive and rather reliable narcotic of great service under certain particular conditions. It is to be hoped that further trials will be made with the remedy, so as to thoroughly establish its position.

THE PRESERVATION OF SOLUTIONS OF COCAINE.

IN an early number of the GAZETTE we alluded to the results of Dr. Squibb as to the employment of salicylic acid for the preservation of solutions of cocaine. Subsequent experience has seemed to prove that salicylic acid, even in the minute percentage employed, added to the irritant effects of the alkaloid. Dr. Squibb was therefore led to the performance of a series of experiments as to the value of boric acid as a preservative; but these experiments, though extending over six months, seem insufficient to establish anything more than a strong probability that boric acid in one-half of one per cent. solution would protect solutions of cocaine. Nevertheless, although absolute proof was not obtained, the evidence in favor of boric acid as a preservative, together with its absolute freedom from irritant effects even in one per cent. solutions, should lead to its general employment for the purpose indicated. In another column we call attention more at length to the general subject of the preservation of the solutions of the alkaloids.

POISONING WITH IODOFORM.

THE interesting papers on the untoward effects of drugs as produced by pharmacological change, published in the two preceding numbers of the GAZETTE by Dr. Joseph Schmidt, call attention to a branch of study which is well worthy of being followed up, and it seems to us that the controversy as to the harmlessness or danger of the free use of iodoform as an antiseptic dressing may possibly be explained in a similar manner. It is certainly very strange that men of the largest experience pronounce iodoform to be entirely harmless, while other undoubted authorities give the most emphatic warnings as to its toxic tendencies. The two following facts may perhaps serve to explain this contradiction: In the first place it has been ascertained that poisoning seldom if ever occurs when a perfectly pure specimen of iodoform is the only antiseptic used; and in the second place, fraudulent adulterations of iodoform have been frequently detected. The most usual falsification is the admixture of picric acid, which is less expensive than iodoform, has the same point of fusion, the same solubility in alcohol and ether, and has a yellow color and crystalline structure corresponding with iodoform. The danger arising from this adulteration is considerable, since picric acid is a decidedly toxic drug, and may besides cause explosions when rubbed up in a mortar. It is easily recognized, however, by agitating the suspected substance in cold water, which in presence of the acid will assume a yellow coloration. After the addition of a little solution of cyanide of potassium, the filtrate will turn brown after ten minutes, due to the formation of isopurpuric acid.

SOME FURTHER POINTS AS TO THE ACTION OF CAFFEINE.

IN spite of numerous and apparently exhaustive researches on the therapeutic action of caffeine, our knowledge of the exact nature of its *modus operandi* seems still incomplete. As to its medicinal influence over both heart and circulation there is no further doubt, nor can the complete absence of all cumulative action be questioned. Of paramount interest, of course, is the question, How does this drug compare therapeutically with digitalis? Does it meet the same indications? Is it equally powerful, constant, and prominent in its effects? It was with special reference to these important questions that Kurschmann, of Hamburg, investigated caffeine (*Centralblatt f. kl. Med.*, April 11, 1885).

Caffeine cannot, according to Kurschmann's observations, be credited with the same amount of constancy of action on the circulation and the secretion of urine as digitalis. Its diuretic effects appear no sooner, and remit far earlier, than after the use of digitalis. While in digitalis heightened renal pressure and slowing of pulse are coincident, the pulse does not slacken at all, or but very little, after caffeine, even when increased diuresis is very marked. It seems probable that the two drugs act differently, on account of influencing the central nervous system differently; often caffeine is efficient when digitalis is powerless, and *vice versa*. No cumulative action, as intimated above, and no traceable permanent injury to the system, can be made out in caffeine, though occasional vomiting, nausea, and headaches have been noted, for-

bidding its employment with certain individuals.

Kurschmann's general conclusions may be summarized as following:

1. Caffeine and its double-salts are usually borne well, even in large doses (up to 30 gr. pro die).

2. Its diuretic effects depend upon an increase of the arterial pressure. Though cardiac action grows often more regular, an appreciable slowing of the pulse is but rarely observable.

3. Caffeine cannot justly be called a heart-regulator in the sense of digitalis (as taught by Riegel), as the absence of any coincidence between rise of renal (*i.e.*, aortic) pressure and slowing of the pulse points to an essential difference in the nature of the action of the two drugs.

4. The diuretic action lacks the promptness and permanence often so conspicuous after the use of digitalis.

ON THE TREATMENT OF CORPULENCE.

AMONG the most interesting discussions which took place in the Congress of Internal Medicines, held in April, 1885, in Wiesbaden, the debate on the most rational and successful treatment of obesity occupied a prominent place. We will place the main results only before our readers, and refer those desiring a fuller information to the *Zeitschrift für Therapie*, May 1, 1885; *Centralblatt für kl. Med.*, May 16, 1885; and *Deutsche Mediz. Zeitung*, May, 1885. Medicines are no longer regarded as in any way influencing obesity. Change of regimen is now universally admitted as the only method of disposing of an undesirable surplus of fat. This change of regimen may consist in altered food, in an altered *modus vivendi*, or in both. Any cure must be regarded as irrational which tends to general inanition, and as inadmissible which cannot be executed without taxing the patient with great deprivations or serious interference with his duties. All methods are intended to limit the previously abundant supply of food-stuffs, either by cutting down the ingestion of all varieties of food, or only that of certain special kinds. The latter method depending upon the exclusion of articles of diet making the fat of the body, it is to be determined which food must be regarded as such. We know that under certain conditions fat may be made by albumen, fat, and the carbo-hydrates. As albumen is an indispensable factor of general nutrition, fat and the carbo-hydrates will claim our sole attention in any attempt to remove obesity by dietetic measures. Ebstein allows his patients a certain moderate amount of fat, but far less than Voit; his cure consequently has been erroneously called "the fat-cure" Experience has proven that Ebstein's method, which, to sum up, consists in withdrawing or limiting the carbo-hydrates, allowing the usual quantity of albumen and even a moderate proportion of fat, has succeeded in removing the surplus of fat in very many individuals. In allowing a certain quantity of fat, Ebstein argues, the sensations of hunger and thirst are reduced, thus preventing overeating.

The type of treatment which consists in withdrawing the fatty matters is the Banting cure. This method allows almost exclusively of a meat diet, forbids not only all fats, but also all carbo-hydrates, and even all liquid diet (as nearly as feasible). It is not surprising that all of these methods, producing serious alterations in the tissue-changes, and prescribing stringent dietetic rules, never secured anything like a general popularity.

Voit recently introduced a modification of the Banting cure, the nucleus of which was the augmentation of the carbo-hydrates and a reduction of albumen. Other more or less efficient methods are those which depend upon the exclusion of liquids.

Ebstein's general *résumé* can be comprised in the following theses:

1. The Banting cure is a successful but not a rational method, as it is applicable for a limited period only, and injures health by the demanded ingestion of an excess of meat and the withdrawal of carbo-hydrates.

2. Methods depending upon limiting the liquid diet, such as proposed by Dancel and Oertel, are rational, but difficult to execute on account of the unavoidable excessive thirst.

3. Ebstein's method is both rational and successfully practicable. It reduces hunger and thirst, and thus facilitates the reduction of the general supply of solids and liquids. The relatively small quantity of fat allowed equals as a strengthening factor a two and a half times as large a quantity of carbo-hydrates. Hence this method is well adapted to the combination with suitable gymnastic exercises.

4. Forced muscular movements, together with profuse perspiration, as recommended by Stockes and Oertel, for the treatment of cardiac weakness depending upon constitutional lipomatosis, require great care and

caution. Atheromatous conditions, of course, would be a positive veto to the application of this method, which in this case can be supplanted by withdrawing the water, though heating the skin by warm air (Roman baths).

5. Medicines and mineral waters are at least dispensable, many being therapeutically inert, others positively injurious.

The discussion of the subject, participated in by Unna (Hamburg), Bauer (Munich) Zuntz (Berlin), Baelz (Tokio), and Juergensen, brought out many other interesting points.

Zuntz was decidedly in favor of mineral waters, which increased the supply of salt solutions, and indirectly of oxygen, favoring thus the combustion and excretion of carbohydrates. Unna drew a distinction between muscular, tegumental, and intestinal fat, and held that the processes of growth and disappearance were different for each kind, showing that no one method of treatment would be efficient for each type of fat.

Baelz asserted the complete absence of obesity in Japan among the working classes, which live almost exclusively on a vegetable diet, take but little water and no alcohol at all.

Juergensen, in conclusion of the discussion, pointed out the danger of treating obesity according to one system only, and emphasized the importance, in fact the necessity, to carefully individualize and act accordingly.

Dr. Kisch, of Marienbad, on the other hand, has opinions at variance with those of other authorities on the best method to get rid of an excess of fat. His principle is to eat moderately, to admit of a mixed diet, though consisting more of meats, and to take persistent physical exercise.

His *menu* at Marienbad, which for a number of years enjoyed great success, is as follows:

5 to 6 A.M.: 3 to 4 glasses of the spring-water, then active exercise one to two hours. Breakfast, 1 cup of coffee or tea, with one teaspoonful of milk, but no sugar, 50 grms. of roll (zwieback), 25 to 50 grms. of cold lean meat or lean ham. No butter.

10 to 11 A.M.: bath in springs with addition of 2 to 3 kgms. of soda; cold douche; one hour's promenade; 1 glass of spring-water with lemon-juice.

Russian or Turkish bath twice a week if the heart is strong and intact.

Dinner, 1 to 2 o'clock: cup of thin, not fatty broth, without cereals; 150 to 200 grms. of fried lean meat without gravy; some light vegetable; 25 grms. of roll. The following are strictly forbidden: the goose, duck, and pork, carp, salmon, herring, pies, potatoes, butter, cheese, cream, ice-cream, etc.

1 to 2 glasses of good wine (even ½ bottle) are permitted; champagne, beer, and liquors are interdicted.

Afternoon: walk for three hours; 1 cup of tea or coffee without milk or sugar.

6 P.M.: 1 glass of spring-water.

Supper, 7 to 8 o'clock: 100 to 120 grms. of fried meat, cold roast, or lean ham, 15 to 20 grms. of bread; one hour's promenade.

Before retiring cold washing of the entire body. The sleep is not to last over seven hours.

SWEDISH MOVEMENTS AS A THERAPEUTIC MEASURE.

THERE can be no doubt of the value of the so-called Swedish movements in the treatment of disease, and in the every-day life of most persons, whilst some of the muscles have more work to do perhaps than is good for them, others remain almost stagnant. To overcome this difficulty, to afford exercise without inconvenience and loss of time, health-lifts, rowing-machines, and other contrivances have been invented in abundance. The health-lift seems to us an abomination, especially in the case of women, in whom its use is very prone to develop uterine disease. More, the terrible strain on the blood-vessels in man or woman during the lift is very apt to find out any existing weak spot. The so-called home-gymnasium of Mr. Ruebsam is the best one of these contrivances that we have seen. We believe that there is not a muscle of the body which cannot be exercised systematically with it. All of the Swedish movements may be practised by its aid. There is no strain connected with its use, and the specimens which we have seen have been so well made that they would last for generations, provided ordinary care was taken, and a new rope or pulley supplied as wanted.

Reports on Therapeutic Progress.

THE THERAPEUTIC VALUE OF RESORCINE.

In an interesting paper, read by DR. A. F. PATTEE before the last meeting of the American Medical Association (*Journ. of Amer. Med. Association*, May 9, 1885), he states that he has used resorcine extensively in various

forms of gastric disturbances, such as in eructations of gas due to food lying in the stomach, and not acted upon by the gastric juice, in pain and vomiting from the same cause, and in gastric dilatation. In ulcer of the stomach it is a most efficient remedy, and agreeable to the patient. The stomach may be washed out with a five per cent. solution, or if the patient emphatically objects to this unpleasant operation, or other conditions do not favor the introduction of the tube, quite as good results may be accomplished by first cleansing the stomach and bowels with a saline cathartic, and then administering 5 grains of resorcine in an ounce of water every hour until six doses have been taken.

In catarrh of the stomach and in the chronic gastric catarrh of drunkards resorcine is excellent; it breaks up the thick tenacious mass which coats the mucous membranes. In chronic intestinal catarrh it cures by preventing the fermentation of food, if taken in doses of 5 grains to the ounce of water before meals; also in flatulence of the bowels from the same cause.

It will prove a most satisfactory remedy in the abdominal pains and feverish condition of children resulting from improper food, and also in acute and chronic diarrhœa of children. Its lack of irritant qualities, no less than its antifermentative properties, gives it a specific value. It is equally serviceable in the diarrhœa of adult life.

In whooping-cough it will at once arrest the paroxysms of coughing if a fifty per cent. solution is sprayed upon the larynx; and if this application is kept up every two hours it will remove it altogether.

The action of resorcine as a local application to the mucous membranes is by no means enhanced by using it strong enough to produce vesication. Dr. Pattee has found a fifty per cent. solution to do much better in ulcerated sore throat than the crystals; and sometimes, where there is great tenderness of the parts, the substitution of glycerin in the place of water is still better.

Resorcine is a very good remedy in acute tonsillitis, in eczema of the throat, and in catarrhal irritation of the fauces. Dr. Pattee states he knows of nothing better to remove the mucus which coats the membrane of the throat in catarrhal conditions than a one per cent. solution used as gargle; and in diphtheria, as a local application to the diphtheritic membrane and surrounding parts, it is invaluable, the strength to be from fifty to seventy-five per cent. in glycerin. This is the most eligible application, and should be repeated every hour; at the same time let the patient take gr. xxx to lx during the twenty-four hours.

In varicose ulcers this may be used with the glycerin plasma,—one to eight. Carbuncles and boils may also be treated in this manner.

Dr. Pattee has had good success in treating bubo with this remedy by injecting a five per cent. solution into the abscess, and applying the plasma externally. Chancroids heal more readily under the action of resorcine than any other remedy that he has ever used.

In ulcers of the cervix uteri, in chronic endometritis, and in uterine catarrh a fifty per cent. solution should be applied to the mucous lining of the uterine cavity on the cotton-wrapped probe. It is quite as useful in acute vaginitis, and in gonorrhœa and inflammation of the urethra in both sexes. Pressed up into the vagina in the plasma form, it will quickly arrest severe vaginal leucorrhœa or gonorrhœal discharge.

In obstetrical cases the puerperal symptoms can be arrested by the internal and local use of resorcine. Introduced into the vagina after parturition, its antiseptic action on the lochial discharge renders it harmless if absorbed into the system.

In hemorrhoids and fistula and in abscess of the rectum it is very useful. The abscess and internal hemorrhoids may be treated with resorcine in the suppository form, a manner thoroughly appreciated by all who have had much experience with daily local applications.

In some forms of skin-disease he has found it quite beneficial, especially in those which have much redness and burning as their characteristic symptoms, as acne rosacea and some forms of eczema. It may be used as a lotion, made up of five parts of resorcine to two parts each of glycerin and water. He has succeeded with this preparation after arsenic, sulphur, and all the other well-known remedies had failed.

Resorcine may sometimes be used upon the skin more advantageously in an ointment made up with vaseline or simple cerate, thirty grains to the ounce. In making this ointment it is very important that a little water be added to the resorcine, so that it may be broken into a plastic mass, forming a soft unctuous compound. This will be found a nice thing for burns, cuts, and bruises, where suppuration is threatened or has already appeared.

OZONEINE.

If the synthetical production of new chemicals continues at the present rate there will certainly be an ominous calamity arising in the near future, viz., inability to find proper and sensible names. What conception can an average lay-mortal have of the therapeutic power of a drug with the name of tetrahydroparamethyloxyquinoline (thalline)? Again, ozoneine, the name of another new compound, has a suspicious sound, savoring strongly of a patent medicine. This drug has a liquid form, was discovered or rather prepared by Beck, and recently discussed by the Biological Society of Paris (*Répertoire de Pharmacie et Journal de Chimie Médicale*, i., 1885). The drug owes its medicinal virtues solely to ozone, which it contains to a degree of saturation. It gives all the reactions of ozone with the papers of Schönbein, Houzeau, and the thallium-paper; besides, it blackens metallic silver, and changes the arsenite of potash into an arseniate. Onimus, of Paris, examining the disinfecting power of ozoneine, pronounces it quite as manifest, though possibly less prompt, than that of ozone in the gaseous state. This observer showed to the assembled physicians two bottles containing pieces of meat in a state of advanced decomposition, and putrid eggs. In both cases odor and appearance of decomposition promptly vanished on the application of ozoneine. Brand, of Toulon, used the drug with remarkable success in cholera and smallpox. Guiol and Long assure us that the medical and general attendants of hospitals for zymotic diseases can procure certain immunity from disease by this preparation, which, liberating ozone, keeps the air saturated with an atomized disinfectant.

THE TREATMENT OF TAPE-WORM.

BERANGER-FERAUD has published a *résumé* of all the cases of tænia occurring in the Marine Hospitals of Saint Mandrier and Cherbourg for a period of twenty-three years (*Boston Med. and Surgical Journ.*, May 21, 1885).

In the treatment of these cases a variety of tænifuge agents was used. In two cases only was turpentine administered. In one, the larger part of the worm, without the head, was expelled; in the other, several joints only were passed, thus confirming the experience of most other writers as to the uselessness of turpentine for this disorder. Turpentine, therefore, as it is not only useless, but may be even disagreeable and dangerous, should be expunged from the list of tænifuge medicines. Filix mas was also found to be unsuccessful. Thymol has been used in forty-five cases, and in all of these (the parasite being the ankylostoma) the success was perfect. The method of administering was as follows:

First, a purgative was given, then, after its operation, six doses, each of 2 grammes of thymol, were given in cachets every two hours, followed in each case by two teaspoonfuls of some generous wine. Usually a sensation of warmth in the stomach ensued, with tinnitus, sweating, and sometimes a feeling of heat in the urethra on micturition; then signs of slight intoxication, with loquacity, followed by deep sleep. Three to twelve hours after the last dose of the medicine diarrhœa usually sets in, and brings away more or less of the ankylostoma. If the microscope shows none of the eggs of the parasite, the cure is considered complete, and tonics only are given. But if the ova are discovered in the stools, at the end of five days the process is repeated, and may be gone through even four or five times.

Pumpkin-seeds were employed in thirty cases at Cherbourg, with a percentage of five per cent. in which the entire worm was expelled after the use of this medicine. The tænifuge was generally given hulled, and in the form of a paste with milk, the patient having been kept on a milk diet the day before. From 3 to 4 ounces of the mashed seeds is a suitable dose to take at one time. In some instances this dose was preceded by an ounce of castor oil the evening before, and followed by a second draught of the oil two hours after the ingestion of the anthelmintic.

Koosso was employed at Cherbourg two hundred and three times, with complete success in twenty-two cases, expulsion of the worm without the head in one hundred and twenty-six, and entire want of success in thirty-nine; sixteen cases were not afterward heard from. At Saint Mandrier there were in one hundred and seventy-three cases fourteen complete expulsions and one hundred and fifty-nine failures. In other words, the Abyssinian anthelmintic was successful in twelve per cent. at Cherbourg, and in six per cent. at Saint Mandrier.

Pomegranate bark (punica granatum) gave the best results of all the anthelmintics at the hospitals Saint Mandrier and Cherbourg. Out

of one hundred and thirty-four trials, it brought away the whole worm in fifty-seven, that is, in forty-three per cent. There was, besides, a radical cure in several cases where the head was not found, but where there was never afterwards the appearance of any segments in the dejections.

The pomegranate is given in the form of the bark of the root, a decoction being prepared by boiling 2 ounces in two pints of water down to a pint, of which quantity ½ is given every hour till the whole is taken. It is desirable that the decoction should be made of the fresh bark, and taken fasting.

It is unquestionable that the recent discovery by Tanret in the pomegranate bark of the alkaloids, to which he has given the name pelletierines, has been a step in the way of progress in the treatment of an affection often so trying to both patient and physician, and brilliant results from the use of these mixed alkaloids have been reported by Laboulbene, Dujardin-Beaumetz, and De Rochemare. The trials which Beranger-Feraud has made with these pelletierines have resulted in a radical cure in seventy-six per cent. of cases,—that is, out of forty-one essays, there was complete expulsion of the tænia in thirty-seven.

TREATMENT OF CHOLERA.

The question, What is the most rational treatment of cholera? cannot be decided as long as its etiological features are but indistinctly discernible. Indeed, it is even doubtful whether the positive knowledge of its causative agencies would materially heighten our capacity to successfully combat the malady. BOUCHARD spoke of this subject recently in the Clinical Society of Paris (*La France Médicale*, No. 29, 1885), and advanced several points deserving special attention.

Koch's pathogenetic theory of cholera, though not yet universally accepted, has certainly the strongest claim to recognition. Hence an antiseptic procedure would seem to harmonize well this view. Bouchard has great confidence in iodoform in cholera, which he gives internally, but not with the view to suppress the disease, but simply to prevent a frequent and fatal complication, viz., constitutional infection following the resorption of putrid intestinal matter. His method of administering iodoform is very curious. One gramme of iodoform is previously dissolved in ether, and mixed with 100 grammes of powdered charcoal, so that the ether being evaporated, the extremely small particles of iodoform are taken up by the charcoal, and can cover a surface of sixty square metres. To this mixture 5 grammes of naphthaline are added, and small doses given several times daily. That the intestinal matters lose their putrid nature completely after such a treatment is testified by the disappearance of every odor from the excrements save that of naphthaline.

Still, in spite of this disinfection of the intestinal contents, the mortality of cholera reaches sixty-six per cent. Besides, patients having typhoid fever and subjected to intestinal antisepsis contracted the cholera, while a cholera patient treated in the same manner was cured, but, getting later a relapse, succumbed in spite of persistent treatment. Bouchard thinks that these facts prove that, provided the comma-bacillus be the specific cause of cholera, its seat is not exclusively the intestinal tract, as claimed by Koch. Doyen has besides actually found the comma-bacillus in the vessels of the liver, and succeeded in obtaining a pure culture from a section of a kidney taken from a cholera patient.

THE TREATMENT OF RUPTURE OF THE BLADDER.

The influence of modern teaching in regard to peritoneal surgery is nowhere more strikingly shown than in the treatment of this formidable injury. The recognized course in rupture of the bladder was formerly to establish free drainage by performing cystotomy, a rational procedure, yet one which was frequently attended with imperfect results. It is true that writers on surgery suggested laparotomy as an extreme measure, but never with much enthusiasm. With the growth of abdominal surgery there have been ample opportunities of studying intra-peritoneal wounds of the bladder of accidental origin. Non-union is the exception in such wounds, provided the edges have been carefully coaptated, and peritonitis from this cause alone is rarer still. Observations of these facts and the knowledge of the tolerance of the peritoneum have so emboldened modern surgeons that now the teaching is not merely to establish drainage and allow the wound to close by granulation, but to open the abdomen at once and sew up the rent in the organ. GÜTERBOCK, in a recent article in the *Archiv für klin. Chirurgie*, after referring to the unfavorable results which frequently followed the old method of treatment, boldly says that "it is incumbent

upon every surgeon to resort to laparotomy without delay when the diagnosis of vesical rupture is at all certain." He advises sewing the edges of the rent to those of the abdominal wound, the subsequent treatment being the same as that pursued after supra-pubic lithotomy. The author makes no distinction between large and small, extra-peritoneal and intra-peritoneal wounds, all being treated in the same manner. This is certainly a mistake, since, as was before remarked, small accidental openings into the bladder, occurring during the course of a laparotomy, are frequently closed with fine sutures, no provision being made for drainage except by catheterism, and the result is perfectly satisfactory. There is room for the exercise of considerable judgment as to when the tear should be sutured *in situ*, and when an external communication should be established. There are cogent reasons why recent wounds of moderate size with clean-cut edges should be treated intra-peritoneally, especially if they are located, as is so often the case, high on the posterior wall.

Bold as the procedure so warmly advocated by the German surgeon may appear, in the light of our present experience it is not only justifiable but is often a duty.—*New York Med. Journ.*, June 13, 1885.

PUMICE-STONE IN PITYRIASIS VERSICOLOR.

Of the numerous remedies proposed for the cure of this affection, such as the lotions of nitric acid, of sulphur, and of borax, the pomades of mercury and tar, none rivals a soap made from pumice-stone in destroying the microsporon. The action of the alkali contained in the soap upon the skin, together with the mechanical effect of the powder of pumice-stone, is certain to produce the desired result. Prolonged frictions should be made morning and night with a soap prepared according to the following (Vigier's) formula:

Black soap, ℔ii;
Pumice-stone, ℔ss.
Mix carefully.

THE TREATMENT OF CHRONIC PROSTATITIS.

The treatment of chronic prostatitis should be directed both to the local and general conditions, and in an elaborate paper on this subject, published by Drs. Tilden and Watson in the *Boston Med. and Surg. Journ.*, May 21, 1885, valuable advice is given as to the best methods for accomplishing a cure.

As local measures counter-irritation to the perineum, with cantharidal collodion or tincture of iodine, being careful not to let the fluid run on to the scrotum or anus, is beneficial. There is no need to blister the surface severely; one side of the raphe can be painted over at a time, and after a few days the other, and this should be kept up for several days, during which the patient need not be confined, but allowed to pursue his usual occupations. In connection with this, prostatic injections of nitrate of silver, applied by means of an Ultzmann's syringe catheter, fenestrated on the sides, and connected with a small syringe containing a drachm of the solution, is perhaps the most useful remedy. Most authors recommend a solution of from 10 to 20 grains to the ounce. This produces vesical tenesmus, often slight hemorrhage, and great temporary discomfort, which, though they pass off in the course of a few hours, are, during their presence, very unpleasant. Anything over 5 grains is likely to produce the symptoms above mentioned; anything below, avoids them. One can begin with a 2-grain solution and increase to 5 grains. The application should be made once or twice a week for a period of from four to eight weeks, when all benefit which is likely to accrue from them at any one time will have taken place. The advantage of this form of administering the drug is that it is applied to the prostatic urethra and not elsewhere. To insure this, the index finger of the left hand may be inserted into the rectum, and the prostatic urethra localized by it: the tip of the catheter should then be passed upon it as a guide to the neck of the bladder, and the fluid injected.

As an adjunct to this treatment, the passage of large sounds once a week, cutting the meatus, if necessary, to allow of their introduction, or the application of a hollow, double current catheter, through which a current of cold water can be made to flow, retained in position for from five to six minutes, is valuable.

Resorcine, and various antiseptic and astringent solutions, may be applied to the prostatic urethra, or drugs may be locally administered in the form of soluble bougies, among which those of iodoform deposited by a porte caustique have been the most useful in the author's hands, but the most decided

effects will be produced by the nitrate of silver solution.

The local treatment above described is especially valuable in cases of long standing, in which the emotional condition is well marked, where neuralgias, defective erections, frequent seminal emissions, and a prostate atrophied, or at any rate not enlarged or tender, are the prominent symptoms. When the gland is enlarged and tender, and approaches a condition of subacute inflammation, instrumental interference may only increase the trouble, and may be followed by chills and urethral fever.

Cases in which there is loss of sexual power are benefited by electricity, one pole being applied over the spine, and the other to the perineum; or when obstinate, one electrode may be inserted into the rectum or prostatic urethra.

Daily out-door exercise should be insisted upon; walking is perhaps the best form in which it can be taken. Horseback-riding is condemned by most authors as tending to produce congestion of the parts, and bicycling is open to the same objection. Cold baths, best taken in the morning, are beneficial, especially in the long-standing cases. Where the condition is more subacute, hot sitz-baths and irrigation of the rectum with hot water will be found to give much comfort. When the course of local treatment is ended, a change to mountain air and an out-door life should be urged. A constipated habit is apt to exist, which tends to increase the congestion of the parts, and this is well counteracted by the administration of strychnine in small doses for a considerable period.

Two or three drugs are useful as adjuvants in the treatment. Gouley recommends the two following prescriptions:

℞ Quininæ sulph., ℈ii;
Acidi arsenici, gr. i;
Strychninæ sulph., gr. i;
Acidi phos. dil., ʒi;
Syr. ferri superphos., ʒiv.
ʒi ter in die.

℞ Tr. ferri chlor.,
Tr. cantharid.,
Vini ergot., aa gtt. v.

Abstinence from fermented or malt liquors is important; claret may, perhaps, be taken. Drinking or eating before going to bed should be avoided.

It is desirable to sleep in a cool room, and on a hard mattress.

OXYGENATED WATER.

Dujardin-Beaumetz presented to the Therapeutic Society of Paris several siphons charged with oxygen (analogous to the siphons of mineral waters) by the so-called barium process. He experimented with this water in cases of loss of appetite, polydipsia, and diabetes. In the first affection return of appetite was readily accomplished without causing gastralgia. In a case of polydipsia, where the quantity of urine voided daily amounted to twenty-eight litres, improvement was equally prompt; while in a case of diabetes no obvious results could be obtained. A quarter of an ordinary siphon is usually taken daily, either pure or mixed with wine. White wines and lemonades charged with oxygen may likewise be used.—*Répertoire de Pharmacie et Journal de Chimie Médicale*, i., 1885.

THE TREATMENT OF CEREBRAL HEMORRHAGE AND EMBOLISM BY THE INTERNAL USE OF CARBONATE OF AMMONIA.

At a recent meeting of the New York State Medical Association, Dr. R. C. Van Wyck read a paper on the above subject, and detailed two cases illustrative of the value of this mode of treatment, the advantages of which he states are as follows:

1. As a diffusible stimulant to the general circulation, relieving the anæmia which is present in the brain, increasing the cutaneous circulation, and inducing perspiration,—relieving in this way intracranial pressure.

2. By its direct action in dissolving the clots. The only agents which possess this property are the alkalies, and the most efficient of these is ammonia.

3. In the œdema and congestion of the lungs, so often seen in apoplexy, the use of this salt will frequently relieve the condition, partly by its stimulating action on the terminal capillaries, and also by its expectorant action on the bronchial mucous membrane.

4. By keeping up the alkalinity of the blood, and preventing further thrombosis.

Remarking that he did not claim for this drug a specific action, but only that it acted as an efficient auxiliary to the use of other measures, he said that in the treatment of cerebral hemorrhage the following would seem to be the proper order of procedure:

1. To endeavor to control prodromal symptoms, which threaten an attack of apoplexy, by prompt venesection and catharsis.

2. To relieve the period of reaction after

paralysis has taken place by arterial sedatives, preferably aconite.

3. To remove the exudation, relieve cerebral anæmia and pulmonary congestion, and prevent further thrombosis by the free use of carbonate of ammonia.

4. To support the system by nourishing, yet unstimulating diet, and by the use of remedies which specially nourish the brain-tissue, such as lactophosphate of lime, cod-liver oil, and the phosphate of zinc.

5. To increase the muscular development by massage, friction, electricity, and strychnine.

The carbonate of ammonia should never be given in cerebral hemorrhage, he said, until the period of reaction has fully set in,—say from ten days to two weeks. It should then be given continuously for at least a month, or until the retrograde changes in the clot are accomplished. In thrombosis and embolism, if the diagnosis can be clearly made, it should be given at once. The dose employed by him is 5 grains three or four times a day, and it is given in half an ounce of liquor ammoniæ acetatis. He said there is one class of cases in which the carbonate of ammonia had not acted well in his hands, viz., cases of cerebral hemorrhage associated with interstitial nephritis and hepatitis. Here he had had good results from the use of sodium phosphate, in doses of from 20 to 30 grains, given in the infusion of dandelion, three times a day after meals, and of bichloride of mercury in doses of $\frac{1}{24}$ of a grain, given (sometimes combined in a pill with digitalis and squill) before meals. In conclusion, Dr. Van Wyck read a letter which he had received from Professor Roberts Bartholow, in regard to the utility of the carbonate of ammonia plan of treatment. There is one class of cases, Dr. Bartholow wrote, in which he had seen most admirable results, viz., the cases of thrombosis of cerebral vessels due to chronic arteritis. Embolism of the brain, secondary to lesions of the cardiac valves, is another condition in which the same treatment is very effective.

THE USE OF CARBOLIC ACID IN SCARLET FEVER.

At a recent meeting of the Liverpool Medical Institution, in a paper read on the use of carbolic acid in scarlet fever, Dr. Wigles-worth claimed that carbolic acid was capable of putting a complete period upon those germs, whatever they might be, that gave rise to scarlet fever. Two years ago he gave the results of the carbolic acid treatment of about one hundred cases of scarlet fever. These results were: no deaths, no secondary fevers, two cases of albuminuria; no purulent nasal or aural discharges, no ophthalmia, no permanently enlarged or suppurating cervical glands. The patients as a rule appeared in their usual health at the end of ten or twelve days. His subsequent experience had amply confirmed these results, and he now felt justified in answering the question, Is carbolic acid a specific in scarlet fever? in the affirmative, provided the case was seen at the outset and the treatment was carried out in its integrity. He had lately had the subject of its prophylactic employment brought under his notice. On the outbreak of the disease in a family, those not attacked were isolated (in the same house), the usual precautions against infection were taken, and in addition the healthy children were given 9 grains of carbolic acid three times a day. The results were eminently satisfactory. A second outbreak was kept within bounds in the same way. Other proofs of its efficacy as a prophylactic were narrated. In adults he had given at the commencement of the disease 3 grains of carbolic acid every two hours. In one case 6¾ grains were given by mistake every four hours. Each dose was followed by vomiting of mucus and diarrhœa. On discovering the error the dose was reduced, and the case subsequently did well. The dose he usually gave now was 3 grains to young children, and 4 grains to adults, given with sp. chloroformi and tincture of orange. He invariably gave it every two hours, night and day, for the first few days, and longer if the case was severe, and then a smaller dose and less frequently until the patient was well. In the case of a patient who had taken 72 grains, he had the urine analyzed by Mr. Abraham, who found only .221 grain in ten ounces of urine.

MILK DIET IN THE ALBUMINURIA OF PREGNANCY.

Tarnier's treatment of the albuminuria of pregnancy by an exclusive milk diet has counted in his hands, as well as in those of others, many successes, and it has received a very strong endorsement from Charpentier, among recent obstetric writers. Under this treatment it is usual to see the albumen lessen, in some cases disappear, and the symptoms which threaten eclampsia, such as headache, dimness of vision, indisposition to exertion, and drowsiness, cease, or become much mitigated. In some cases, however, it is impor-

tant to conjoin with milk diet a hot bath once in three or four days. The temperature of the bath should be from 98° to 100°, and while in the bath or immediately after it, the patient should drink a tumbler of hot milk. A profuse perspiration usually follows, and the relief is prompt and positive. In one case, however, a primigravida in the eighth month, who had albuminuria for at least four months, and who derived marked benefit from the hot bath, had also a very serious discomfort following it. There was unusual and violent activity of the fœtus always occurring after the bath, so that she was for some hours unable to sleep,—a very serious inconvenience, as the usual and most favorable time for the bath is just before retiring.

Valuable as most practitioners regard the milk treatment of the albuminuria of pregnancy, some entirely reject it. Pajot, for example, in a recent discussion held at the Paris Obstetrical and Gynecological Society, and reported in the *Journal d'Accouchements*, May 5, refers to it as a bitter pleasantry. One of his arguments against the milk treatment is that infants from six months to the end of the first year are peculiarly liable to eclampsia, and yet they are then on milk diet. Guéniot very well answered this argument by saying that these infants that have eclampsia are not albuminuric, and the milk diet in albuminuric pregnant women does not act upon the eclampsia, but upon the albuminuria; it is only indirectly by curing the albuminuria that it renders eclampsia much rarer. It is impossible to attribute infantile and puerperal eclampsia to the same cause.—*Medical News*, June 13, 1885.

THE TREATMENT OF PLEURISY BY TAPPING AND ACTUAL CAUTERY.

The above method of treatment as employed by Drs. Cayla and Picot has recently been attracting considerable attention, and Dr. L. Gourichon (*Journ. de Méd.*, May, 1885) has recently published a paper which indicates the conditions in which this plan of treatment is most useful. The mode of procedure is about as follows:

The pleural fluid is first evacuated by puncture, either entirely or in part, according to the nature of the case, and then a large number of cauterizations are made with the thermocautery over the entire extent of the thoracic wall. These cauterizations should be very numerous, from one to two hundred, and not be distant from one another more than half an inch, and should always extend beyond the limits of the pleural inflammation. They should be made by simply touching a pointed hot iron to the skin so as to make a minute cauterized point.

In comparing his observations with those of Picot, Dr. Gourichon found a most marked difference in their results; while in eight cases Picot obtained a cure, the time varying from three to eight days, Gourichon was never able to cure his cases before the seventh day, and in many cases the treatment was prolonged to the fifteenth or twentieth day. This difference in result probably depends upon the fact that in the first cases the pleura was completely emptied at the first operation, while in the second, where the effusion was very considerable, two or three operations were required. Moreover, all the cases of Dr. Picot were acute, while those reported by Gourichon were nearly all chronic. It would therefore seem that this method of treatment is most applicable to acute cases of pleurisy, although it has also produced good results in tubercular pleurisies with acute febrile reaction. It appears to be less satisfactory in cases where some systematic affection, such as rheumatism, cardiac disease, etc., is the cause of the pleurisy. On the other hand, the use of the points of cautery is contraindicated in irritable nervous subjects, for they are as a rule badly borne by such individuals, and the suffering which they occasion nearly always prevents their second application. After the application of the cauteries the local pain in the side disappears, although the pain induced by the cauterization itself persists. It is very curious to notice the difference which exists as regards a tolerance of cauterization between tubercular cases which have a chronic inflammation of the pleura, or of the lungs, and in whom cauterization may be almost daily made without pain, and in cases of acute pleurisy, where they are apt to be very painful.

One case reported by Gourichon will serve to illustrate the mode of application of this treatment and the good results which may be expected from it. The case was that of a woman in whom the chest had already been tapped ten times before commencing to apply the cauteries. Then under the use of this treatment most marked improvement was observed; the fluid, of which 1750 grammes were removed at the eleventh puncture, fell to 1250 at the twelfth and thirteenth, 1000 at the fourteenth, and 900 at the fifteenth, and then continued to decrease in quantity. Five punctures only were required in the month in which they were associated with the cauteries,

while ten were required in the preceding month. The case was finally entirely cured.

COCAINE WITH PILOCARPINE.

One main drawback to the use of cocaine for producing anæsthesia of the conjunctiva is the dilatation of the pupil, and paralysis of accommodation, which it nearly always produces. Dr. H. W. Bradford, writing to the *Boston Medical and Surgical Journal* for May 28, 1885, states that this effect can be avoided by the combination of cocaine with pilocarpine. He has found that the mixture of 10 drops of a five per cent. solution of pilocarpine in a drachm of four per cent. solution of hydrochlorate of cocaine secures the anæsthetic effect of the cocaine, while leaving the pupil accommodation absolutely unaffected; while his experience has further warranted him in the statement that the neutralizing effect of the pilocarpine is constant and innocuous.

BELLADONNA AS A MEANS OF PRODUCING TOLERANCE OF THE IODIDE OF POTASSIUM.

The fact that belladonna produces dryness of the throat, nose, and mouth, led Dr. P. Aubert (*Journ. de Méd.*, May, 1885) to the idea of employing this substance to counteract the disagreeable effects produced by the iodide of potassium; and he reports three strongly-marked cases of intolerance of the iodide in which the addition of belladonna produced the most satisfactory results. He uses the belladonna in the form of the extract, of which two pills, each of 5 centigrammes, are given daily, one in the morning and one in the evening. In one of the cases which he reports, after several days' use of the combination of the iodide and belladonna, the latter could be discontinued without the iodide producing any disagreeable results.

THE TREATMENT OF CHOLERA INFANTUM.

According to Dr. W. Byford Ryan (*Amer. Practitioner*, May, 1885), the indications for treatment of cholera infantum are, *first*, to restore the blood-supply to the surface, thereby relieving the visceral engorgement; *second*, to maintain capillary action of the entire economy, thus helping to arrest extravasation of serum; *third*, to give tone to the muscular and mucous coats of the bowels; and, *fourth*, to supply proper nutriment. Dr. Ryan believes that these indications can be largely met by the use of belladonna, since belladonna, by dilating the superficial capillaries, will help to remove peripheral anæmia. It will further tend to arrest secretion from the mucous membrane of the bowels, and by the anæsthesia which it produces of these surfaces will help to remove the extreme irritability of the stomach and intestines, and thus do away with the prime factor in the causation of vomiting and excessive diarrhœa. Dr. Ryan believes, and states that his experience supports that belief, that belladonna will in every case arrest both the vomiting and diarrhœa at once, and that no child sick of this dangerous summer complaint, who has a fair constitution, need be lost if it have this treatment, combined with and followed by such tonic measures and nourishment as will suggest themselves to any intelligent physician. As the most suitable tonics Dr. Ryan recommends minute doses of nux vomica and arsenic.

THE TREATMENT OF INFANTILE CONVULSIONS BY THE TINCTURE OF BELLADONNA.

Dr. Droux (*Bulletin Générale de Thérapeutique*, May 15, 1885) reports a number of cases of infantile convulsions which he cured by the administration of the tincture of belladonna, a treatment which he has found to succeed in all cases of this disease where the convulsions are not distinctly due to dentition or to disorders of digestion. He draws the following conclusions as embodying the results of his observations:

First.—Given in very small doses between the attacks of infantile convulsions, the tincture of belladonna may serve to prevent subsequent attacks.

Second.—The tincture of belladonna will not serve to cut short a convulsive seizure when it is administered during the attack itself; it only acts as a preventive measure.

Third.—The tincture of belladonna is useless in infantile convulsions due to dentition; in such cases chloral will be found of the greatest benefit.

HYDROCHINON, A NEW ANTIPYRETIC.

Medical literature has been enriched during the past two years by a number of important papers on the antipyretic powers of several coal-tar derivatives. Kairine, antipyrine, thalline, have been brought into notice as efficacious antipyretics, and within the past few months hydrochinon has been added to this

list. Although the physiological effects of hydrochinon have been pretty clearly determined by Brieger, scarcely anything has been written upon its clinical action. The only paper, so far as we know, with the exception of one which we will notice directly, is by Dr. Siefert on the results of the treatment of thirty-eight cases of pyrexia with this drug, the main points of which have already been recorded in the THERAPEUTIC GAZETTE. Recently, DR. FRANCIS KINNICUTT has made a careful study of the use of this drug in the wards of the St. Luke's Hospital in New York, and he has published his conclusions in the *Med. Record* for May 30, 1885. When taken by healthy individuals, 10- to 20-grain single doses produced no appreciable symptoms, the pulse, respiration, and temperature being unaffected; while a single dose of 40 grains in one instance was followed in ten minutes by a feeling of slight fulness in the head and slight dizziness, wholly disappearing in fifteen minutes; no appreciable diaphoresis occurred in any instance. To determine its effects on pyrexia of different diseases it was given to fifteen cases, of which three were pulmonary tuberculosis, one general tuberculosis, two pleurisy with effusion, three of acute pneumonia, one of acute inflammatory rheumatism, one acute rheumatism with pleurisy, one intermittent fever, one puerperal septicæmia and pyæmia, one facial erysipelas, and one of cellulitis. Fifteen to twenty grains were the standard single doses adopted, and marked reduction of the temperature was obtained, without exception, in all the cases, after each administration of the above dose, the temperature beginning to fall as a rule within fifteen minutes after the administration of the drug. The minimum level is reached in two to two and a half hours, and the temperature then gradually rises during the next one or two hours to its former height. The minimum was only .5° F., the maximum 5.2° F.

Neither nausea nor vomiting occurred in any case during the use of the drug. Moderate sweating was observed in the majority of cases accompanying the fall of temperature; it was rather a relief than a source of discomfort to the patient. In the case of puerperal septicæmia and in one case of pneumonia it was profuse.

In the case of general tuberculosis it was on no occasion present. A slight chill occurred in two cases during the rise of temperature, following the minimum level reached. Slight chilly feelings were described by other patients on close questioning. They were wholly absent in two cases in which 600 and 230 grains, respectively, were given in the course of the disease. There was an entire absence of the disagreeable symptoms (fulness of the head, dizziness, ringing in the ears, etc.) accompanying the use of large doses of quinine and the salicyl compounds. The effect of hydrochinon upon the pulse was, in a measure, proportionate to that upon the temperature; its frequency constantly diminished with the fall of temperature, and its quality apparently improved. The number of the respirations fell coincidentally with the temperature and the pulse in cases where their frequency evidently was dependent upon the pyrexia alone. In cases of pulmonary disease the respiration was affected slightly, if at all.

The most efficient mode of administration.—Single doses of 15 to 20 grains of hydrochinon by the mouth were found amply sufficient to produce the effects above described. In cases of pulmonary tuberculosis such a dose administered at the time of the usual afternoon rise of temperature readily controlled the pyrexia, with great relief to the patient.

In cases where there was a tendency to a continuously high temperature, three or four single doses were given in the course of the twenty-four hours, with the effect of maintaining the temperature at a moderate level. The latter method of administration would seem suitable in cases of typhoid fever.

The comparative effects of the drug given by the mouth and rectum were observed. It was found that doses of 30 grains, given in a little starch-water in the form of enemata, were required to produce the results obtained from 15 grains administered by the mouth.

With the doses used there was never any indication of cardiac depression; on the contrary, the quality of the pulse seemed rather to improve coincidentally with the diminution in its frequency.

The effect of hydrochinon upon the urinary excretion was very carefully observed. After a single dose of the crystals, the urine, when voided, was normal in color. It assumed a greenish-brown, often a dark-brown, hue after standing for twenty-four hours. A similar dark discoloration was observed at *the time of voidance*, in the urine of patients kept continuously under the influence of the drug. It was found that nitric acid alone and nitric acid with heat, used as in testing for albumen, could be relied upon for detecting the presence of the products of hydrochinon in the urine. With nitric acid, an orange-red color appears at the line of junction of the acid and

the urine in the test-tube; above this, layers of green and purple successively. On the additional application of heat, a dark—almost black—cloud appears in the upper levels of the column.

Elimination of hydrochinon products, after single doses of 20 grains, was ascertained to begin in from thirty to forty-five minutes, and to continue for about sixteen hours. A gradual diminution and increase of the sulphates corresponded with the increase and subsidence of the products of the substance in the urine.

Neither albumen nor casts were ever detected in urine which previously had been free from them.

From his experience with the use of hydrochinon, Dr. Kinnicutt draws the following conclusions:

1. That in hydrochinon we possess a new and most efficient antipyretic.

2. That its use is apparently unattended by any injurious effects.

3. That the antipyretic effect of single doses is comparatively temporary, resembling in this respect that of kairine, thalline, and antipyrine; that the maintenance of moderate temperatures in hyperpyretic conditions can be safely obtained, however, by repeated doses.

4. That while apparently without effect in arresting a specific disease-process, its employment is conservative and productive of a marked amelioration of many of the symptoms incident to high temperatures.

5. That with our as yet limited experience with the drug, it should be given prudently, and its effects carefully observed.

ON SUBSTITUTES FOR DIGITALIS.

The cumulative effects of digitalis form a serious objection to the use of this powerful and reliable remedy, and are sufficient to encourage the examination of other drugs, which, like caffeine, convallaria majalis, and helleborëine, are likewise claimed to be heart-tonics without possessing any cumulative action.

FALKENHEIM tried convallaria majalis in eight cases of valvular lesions connected with compensatory changes, and found that its therapeutic action depended upon the amount of convallamarine, and that it exercised a regulating influence over the circulatory apparatus without involving any danger to the patient. This author, though, admits that its action is less certain than that of digitalis. A cumulative effect could not be observed, though large quantities of an infusion of the flowers of convallaria were given every two hours daily for fourteen days. The Russian specimen contains only the flowers, and as these are the actual bearers of the medicinal properties of the plant, it is consequently superior to the German specimen, in which the stalks are also included.

Trials with helleborëine (pill-form, 1 to 1½ gr.) in seven cases of heart-disease gave similar results. Falkenheim concludes that "doubtlessly helleborëine is an energetic heart-remedy in the sense of digitalis and has no cumulative action," though this statement is opposed to the testimony of other observers, as already referred to in the GAZETTE for May. In four cases its action was prompt and efficient, in three others (in which digitalis had previously failed) it seemed without value. Diarrhœa was noted to follow somewhat large doses of both convallaria and helleborëine, but could be readily checked by the addition of the mucilage of gum arabic.—*Deutsch. Arch. f. kl. Med.*, vol. xxxvi. pp. 1–16.

ON THE THERAPEUTICS OF DIGITALIS.

No drug has received more scientific attention from pharmacologists and therapeutists than digitalis: and yet to any one who is conversant with the medical mind of to-day, it is very evident that some confusion and vagueness exist concerning its mode of action and its proper adaptation to diseased conditions. For example, the impression is afloat that digitalis slackens the heart-movements by stimulating the so-called inhibitory apparatus of the vagi, and that it exerts a therapeutic influence through this mechanism by actively lengthening the diastolic period, thus giving repose to the heart, and allowing time to recuperate its waning energies. Again, one of the most striking features in the range of the action of digitalis is its power to reduce the number of cardiac pulsations, hence it is often administered when aconite, veratrine, and other agents are indicated. An interesting paper on the therapeutics of digitalis, published in the *Medical Record*, June 13, 1885, by DR. THOMAS J. MAYS, serves to remove many of these misconceptions, and furnishes some valuable data for the clinical use of digitalis.

From the physiological action of digitalis it is evident that this drug is indicated where there is a loss of tension in the heart and arteries usually associated with a quick pulse. The loss of arterial tension not being taken into proper consideration, it is often errone-

ously administered in fever and in acute inflammations for the purpose of reducing the pulse, when aconite or veratrine should be given. While both of the latter agents, like digitalis, have the power to reduce the number of cardiac pulsations, they do it in a manner altogether different from that of digitalis. They chiefly act on the motor or muscular mechanism of the heart, and bring on diastolic arrest, while digitalis affects the nervous apparatus of the heart principally, and produces systolic arrest. Then aconite and veratrine, and other agents of this class, only reduce the pulse the most effectually when administered in maximum or paralyzing doses,—*i.e.*, doses in which they manifest their toxic properties,—and can, therefore, never be continued as long as digitalis, which slows the heart in minimum or stimulant doses. Then again digitalis is slow in its action, on account of its difficult solution in the body, while both aconite and veratrine are well adapted to produce that quick impression on the circulatory organs so desirable in acute inflammatory diseases by being easily dissolved and rapidly absorbed. These distinctive differences in their action plainly show that the indication for digitalis is a contra-indication for aconite and veratrine, and clearly demonstrate the folly of administering digitalis, as is often done, in the first and second stages of croupous pneumonia, when the intense congestion, the threatened or existing exudation, the generally slow pulse, and the whole pathological aspect of the case denote an already overburdened and overdistended arterial circulation,—precisely the condition which the drug is calculated to assist in aggravating.

That quantity of digitalis which constitutes a stimulant dose depends upon the degree in which the circulatory organs have departed from the normal line. In the weak heart and flaccid circulation depending on a valvular lesion, 4 to 6 drops of the tincture every three hours for the first day, and afterward every four hours, will generally suffice to bring relief. In this dose it also acts very desirably in acute diseases after the crisis has been reached or passed. It will add vigor to the fatigued and overworked heart, and assist it in passing this dangerous period. The same dose is also applicable in that form of bronchitis depending on cardiac incompetency, but acts best here in combination with small doses (gr. ii) of iodide of potassium and sulphate of atropine (gr. $\frac{1}{800}$). In nervous shock, where besides an intense depression of the circulatory functions the nervous centres are blunted, larger doses (x to xv drops) are required, but its action is materially enhanced here in combination with sulphate of atropine (gr. $\frac{1}{150}$). Its action is, however, obtained the quickest when $\frac{1}{60}$ to $\frac{1}{30}$ of a grain of digitalin is dissolved in water and glycerin, one of the latter to ten of the former, and given subcutaneously. In delirium tremens and chronic alcoholism enormous doses of the tincture (f℥i to f℥ii) are employed to advantage. In fact, small doses are powerless to make any impression on the indurated nervous system. A safe guide in the administration of digitalis is to watch the urinary excretion, and to diminish the dose, or withhold it, as soon as the urine begins to be reduced in quantity.

NEW OBSERVATIONS WITH COCAINE.

Rusconi, of Mailand, recommends the injections of cocaine combined with morphine (*Gazz. degli Ospitali*, 1885). The injection causes no unpleasant sensation; analgesia appears much sooner than after the use of morphine alone, and there is no necessity of raising the dose of the latter. He used ¼ to ½ grain of cocaine, ⅙ grain of morphine, and ½ drachm of water, and could in painful conditions procure either absolute relief from pain or tolerable ease for eight or nine hours. Injections of cocaine and atropine, with or without morphine, likewise cause analgesia, though symptoms of atropine intoxication usually appeared. Rusconi also made some interesting general observations with cocaine.

A two per cent. solution painted on the healthy skin renders the latter rapidly pale. After two minutes sensibility has almost entirely disappeared, so that a needle may be inserted in the skin without being felt at all, and a piece of ice is only appreciated after a minute or so. The aperture made by the needle does not draw any blood. After ten minutes sensibility reappears, and at the same time the wound begins to bleed. Still more effective is the anæsthesia caused by a three per cent. solution of cocaine. Deeply-seated pains, such as in parametritis, can be assuaged by merely painting the abdominal region corresponding to the uterine locality. We should, however, think that a tampon saturated with a two per cent. solution and inserted into the vagina or the uterus would be more efficient. In fact, such an anæsthesia, produced simply by painting the skin, is of sufficient duration to allow of the painless execution of incisions and minor operations.

A lady suffering from neuralgia of the trigeminus could always obtain relief within a minute by inserting a cotton tampon immersed into a one per cent. solution of cocaine into the ear. In ulcerous or carcinomatous processes of the vagina, tampons, or even brushing with cocaine, brings also prompt relief.

THE TREATMENT OF SPINA BIFIDA BY THE IODO-GLYCERIN SOLUTION.

In order to form a correct estimate of the value of the treatment of spina bifida by the injection of Dr. Morton's iodo-glycerin solution, the Clinical Society of London recently appointed a committee of investigation, and they have published their report in the *British Medical Journal* for May 30, 1885. In order to obtain thoroughly reliable results the committee endeavored to ascertain as far as possible the natural history of the deformity thus treated, and have prepared tables of cases treated in various manners for purposes of comparison.

As regarded the natural history of the deformity, the registrar-general's report for 1882 showed six hundred and forty-nine deaths from spina bifida in England and Wales, of which six hundred and twelve occurred under one year of age. The committee held that, though a certain number of these deaths were due to local causes,—rupture of the sac, draining away of the cerebro-spinal fluid, and subsequent septic meningitis,—yet in a large proportion of the cases death ensued from the marasmus and general defective nutrition frequently associated with the deformity, and which could not be remedied by any local or other treatment. The tables next dealt with treatment by injection with simple solutions of iodine, and showed a considerable amount of success. Then ligature of the sac was considered, and here again good results seemed to have been obtained. Excision likewise had a considerable proportion of success. The plan of repeated tapping and pressure gave the least successful results of any. The injection of Morton's fluid, according to the committee's tables, showed a percentage success of between fifty and sixty. The high mortality was thought to be, in unsuitable cases, largely due to the treatment having been adopted on account of its simplicity and supposed safety. In spite of the favorable results of ligature and excision of the tumor as shown in the tables, the committee felt themselves compelled to report against these methods of treatment. There was reason to think that the published cases might be misleading, owing to some cases of failures not being recorded, while all the successes, being regarded as surgical triumphs, were almost certain to have been recorded. Moreover, it seemed probable that a careful selection of cases had been made. The committee, therefore, advocated the plan of treatment by injection,—and preferably by the injection of Morton's fluid.

TANNATE OF MERCURY.

At a recent meeting of the Boston Society for Medical Improvement (*Boston Med. and Surg. Journ.*, June 18, 1885) Dr. G. H. Tilden showed a specimen of the tannate of mercury which has recently been employed in the treatment of syphilis, having been first used for this purpose by Lustgarten. The drug consists of a coarse, granular powder, of a greenish color, inert and tasteless. It is unaffected by acid solutions, but is decomposed by dilute solutions of the alkalies, the action of which causes the formation of mercury in a very finely divided state, a fact which can be verified by the microscope. The theory of its action is that it passes through the stomach, when the secretions are acid, unchanged until it reaches the intestine, when the normally alkaline secretions cause its decomposition and the metallic mercury, which is set free, is absorbed. The reports of its efficacy in the treatment of syphilis are very favorable, and its use is apparently attended with uncommon freedom from any of the ordinary bad effects due to the administration of mercury, such as salivation and gastric or intestinal irritation. The dose is about a grain, and it should not be combined with alkalies or the iodide of potassium, the former causing its premature decomposition, while the latter combines with it to produce the iodide of mercury, a much more irritating and powerful preparation than the tannate.

TREATMENT OF TETANUS.

According to the Paris correspondent of the *British Medical Journal*, May 30, 1885, at a recent meeting of the Société de Chirurgie, M. Verneuil opened a debate on the treatment of tetanus. He recently recommended that tetanic patients be kept in a dark room where no sounds could be heard; that they should be enveloped in cotton-wool, be fed on fluid food, and take strong doses of chloral mixed with morphine. The treatment should

be continued as long as possible, notwithstanding any improvement that declared itself. M. Verneuil mentioned a case described by M. Cauchois, in which the patient died on the thirty-first day, the day that the treatment was discontinued. M. Cauchois mentioned another patient who was treated according to M. Verneuil's plan, and was cured in twenty-three days. M. Verneuil has cured two cases. One patient, whilst under treatment, took 450 grammes of chloral and 114 centigrammes of hydrochlorate of morphine. Another was a young man, aged 19, who wounded his hand. He was under treatment during twenty-seven days. Chloral and morphine were administered at the same time as potassium bromide, without having any effect. Chloral was discontinued, and the condition was greatly aggravated. It was resumed. In thirty-six hours 30 grammes of chloral were absorbed. A daily dose of 15 grammes was then administered. M. Verneuil insists on the necessity of giving strong doses of chloral. Recently, an Italian has published five cases, all of which were cured. Two of the patients were given baths ; three others had baths and atropine ; two others had chloral, atropine, and baths of one or two hours or more. M. Ferrier observed, during the discussion, that the treatment recommended by M. Verneuil would be perfectly useless in acute tetanus ; for instance, when dysphagia was present, it was impossible to give chloral in a draught, and when administered by the rectum it often provoked rectitis and spasms. M. Poncet believed that chloral was efficacious in chronic tetanus, but was useless in the acute form.

THE EMPLOYMENT OF CHLORIDE OF METHYL IN NEURALGIA.

Chloride of methyl, at the ordinary temperature and pressure, is a colorless gas, soluble in water, with a peculiar ethereal odor, and a perfectly neutral reaction. It may be prepared by gently heating a mixture of one part of methylic alcohol, three parts of sulphuric acid, and two parts of chloride of sodium. The gas which comes off should be washed by passing through an alkaline solution. This gas is easily liquefied by a reduction of temperature or by pressure, and when once reduced to a fluid form it possesses a great tendency to become vaporized, and at an ordinary temperature passes at once into vapor. As it passes from the fluid to the gaseous state it absorbs an immense quantity of heat, and the cold then produced is sufficient even to freeze mercury. It is this phenomenon which has been utilized in the treatment of chronic neuralgia which has resisted the ordinary measures. It is evident, however, that the mode of administration of this new drug demands especial precautions, on account of the impossibility of preserving it in bottles in its normal physical condition. One method in which it may be employed is to force it under heavy pressure into a siphon-bottle, such as are ordinarily used for soda-water. In such cases the risk of explosion may be somewhat modified by enclosing the bottles in a wicker-work basket or cover. It is evident that the sole difficulty in such an apparatus is the obtaining of sufficient strength to prevent the bottles bursting by the pressure of the gas. This, however, can be readily overcome by making the reservoir out of copper, and DR. BARDET (*Nouveaux Remèdes*, May 15, 1885) describes a convenient and simple apparatus for this purpose. It consists simply of a strong copper bottle, furnished at the neck with a stop-cock to which is attached a fine leaden tube furnished with a jet. In its employment all that is necessary is to direct the spray for a few seconds on the course of the nerve, when the patient at first experiences a sensation of intense cold, which rapidly gives way to a burning feeling. Frequently a single application will be sufficient to relieve the pain, but where the first fails it may be repeated once or twice with an interval of one or two days.

AMPUTATION OF THE BREAST.

Opinion as to the best mode of treating the wound left after amputation of the mamma is much divided just now in Paris, opposite views being held by surgeons of equal eminence and experience. On the one hand we have a school led by M. Verneuil, teaching that no attempt whatever should be made to secure healing by primary intention, but that the large wound left after free removal of the breast and of the axillary lymphatic glands should be allowed to close by granulation In support of this view they allege that when the operation is properly performed it is impossible to secure union by first intention, and that the attempt to do so induces surgeons to narrow the limits of the operation, and so to render recurrence of the disease more certain and more rapid. They further assert that the opposite practice is dangerous, as it increases the liability to erysipelas and other forms of blood-poisoning, and that the

time taken for the final healing of the entire wound is not at all, or not materially, diminished. On the other hand, we find MM. Trélat, Champonnière, and Polaillon representing another school, and holding equally firmly that as a rule union of the wound by first intention is not only the quickest but the best mode of healing in the majority of cases, and that when properly carried out after a carefully planned and executed operation, it does not expose the patient to risk of local or general poisoning, or increase the danger of recurrence of the malignant neoplasm. When views so divergent are expressed by such high authorities upon a line of practice very common in the experience of all operating surgeons, a careful consideration of the question is demanded by all engaged in this department of practice. As in other similar cases, we should expect to find much of truth on both sides.

Three points are to be considered in operating for cancer of the breast,—the successful removal of the disease, the safety of the operation, and the speedy restoration of the patient to health. The relative importance of these points depends upon the view that may be held of the value of the operation. If it be held that it is impossible or impracticable so to operate as to prevent altogether or to postpone for more than a short time recurrence of the disease,—if, in other words, the advantage of the operation be slight,—then the certainty and speed of recovery from the operation become of greater relative importance than in the opposite condition. When the possible advantage to be gained is great, the price to be paid for it may not unreasonably be increased. When we apply this test to amputation of the breast, we find that while the success of the operation in retarding or preventing recurrence is only too small, yet it is such as to justify the surgeon in asserting that in well-selected cases he may hope to postpone recurrence of the disease for many months or years, if not permanently. From this point of view the thoroughness of the operation becomes the chief aim of the surgeon, in comparison with which the other considerations named are of secondary importance. Where, on the other hand, in more advanced cases of disease the utmost that can be hoped for is an amelioration of the patient's condition and a short respite from the ravages of the disease, the severity of the operation assumes serious proportions, and the value of any means that render the safety of the patient greater and her recovery more rapid is proportionately increased. In cases that are favorable for the operation the parts should be very freely removed, all outlying portions of the mammary gland being carefully sought for, and the axillary glands, even when not palpably affected, excised. About this all surgeons are agreed; but it is necessary to insist upon the thoroughness of the removal, as shown by the time elapsing before the reappearance of the disease as the one test by which success or failure of an operation is to be judged. The surgeon must decide in each case how the operation is best to be planned, and it is wrong to lay down any rule as to the extent of the skin or other tissue to be removed, different cases requiring quite different treatment in this respect. But this imperative demand for free removal of the disease having been met and the wound inflicted, the question arises whether there is any reason why one method of healing is to be preferred to another. It is no doubt true that great care and attention are needed to secure healing by first intention; but there is also no doubt that in many cases such care and attention are rewarded with complete success, and that the period of convalescence is rendered considerably shorter than under any other mode of healing. And unless the surgeon neglects making proper provision for drainage, and fails to protect the wound by a thorough use of antiseptics, he does not expose his patient to the danger of erysipelas and other infective wound-diseases. Nor is there any *a priori* pathological reason why healing by granulation should be preferred to that by primary adhesion. The resemblance between the cancer-cell and the rapidly-formed and growing masses of protoplasm found in granulation-tissue is an argument in favor of healing by first intention where the amount of lymph effused is reduced to a minimum, and where, also, the vascular hyperæmia is less and of shorter duration than in healing of a large wound by granulation. The influence of hyperæmia upon the growth of cancer is well known; and should the surgeon leave behind in his wound any cancer "germs," or cells prone to take on the cancerous development, it is in accord with pathological doctrine and clinical experience that prolonged hyperæmia and abundant cell-growth of low type might stimulate the germs or disordered cells, and lead to a rapid recurrence of the disease. While, therefore, we cannot but think that the doctrine of M. Trélat is sounder than that of M. Verneuil, we fully endorse the latter's caution that in

attempting to secure rapid healing of his wound the surgeon may consciously or unconsciously lessen the extent of tissue removal, and so sacrifice the greater to the lesser good. We would state the matter thus: In planning and carrying out his operation the surgeon should think only of the wide and efficient removal of the disease, without regard to the mode of healing of the wound; but having made the wound, if he finds it practicable to obtain healing by first intention he should certainly direct his efforts to that end.—*Lancet*, May 30, 1885.

A NEW METHOD FOR THE EXTERNAL EMPLOYMENT OF CRYSOPHANIC ACID.

Under the name of traumaticine, a solution of gutta-percha has been employed for some time as an excipient in certain drugs, as the solution painted on the skin by the aid of a brush leaves firm pellicles which will serve to preserve the skin from friction. Dr. Auspitz has recently employed this solution for the external application of crysophanic acid, so as to cause it to adhere to the skin and protect it from rubbing, and to prevent this drug from staining bodies which come in contact with it. This preparation has been employed with success in the treatment of psoriasis, and it is evident that it may serve for the application of a large number of drugs which are soluble or capable of suspension in chloroform, and which appear to the physician a valuable method of treatment. Auspitz (*Nouveaux Remèdes*, May 15, 1885) dissolves one part of crysophanic acid and one part of gutta-percha in eight parts of chloroform, and the preparation so prepared has been also used with success by Dr. Fournier. Dr. Besnier, however, prefers to apply first a solution of crysophanic acid in chloroform, and then to cover this with a varnish of gutta-percha in chloroform.

His formula is one part of crysophanic acid dissolved in eight or nine of chloroform for the first solution, and one part of purified gutta-percha dissolved in nine of chloroform for the second.

THE INTRAVENOUS INJECTION OF MILK.

Having recently injected milk into the veins of a person about to die, who survived for some hours after the operation, and believing that this therapeutic measure is one of great value as a substitute for the transfusion of blood, Mr. Charles E. Jennings (*Brit. Med. Journ.*, June 6, 1885) has made a careful study of the subject, from which physiological, experimental, and clinical evidence combined he has drawn the following conclusions:

1. The intravenous injection of a small quantity of newly-drawn milk is harmless.

2. Large injections of milk are fatal, with polyuria as the chief symptom.

3. The employment of impure or stale milk is most dangerous, on the probability that septicæmia will follow the operation.

4. The operation is to be recommended in the later stages of cholera, enteric fever, phthisis, and pernicious anæmia, as a substitute for the transfusion of blood; and, in short, in all cases where transfusion of blood is indicated on nutritive grounds, but where a blood-donor cannot be procured, or where this operation is, for other reasons, impracticable.

THE ELASTIC BANDAGE IN STRANGULATED HERNIA.

The elastic bandage is so decided an improvement on the old fashioned truss, and is so simple a contrivance in itself, that it is a matter of surprise that its palpable advantages should not have been recognized sooner. Though preferable to the truss in every form of hernia, it is especially in the strangulated form that the bandage renders priceless services. Jakowlew regards the application of the elastic bandage—next to an operation—as the most effective method of eliminating an incarcerated hernia, and speaks with confidence of its usefulness, even after the failure of taxis (*Centralblatt für Chirurgie*, No. 11, 1885). According to this author there are various modes of origin of an incarcerated hernia, as can be seen in herniotomy or in an autopsy. Each origin, as far as it can be ascertained, will, of course, call for a special form of taxis, but the bandage will be equally useful in all cases. The permanent, mild, and uniform pressure of the bandage on the intestinal loop mostly results in either pushing the intestinal contents backward into the afferent or onward into the efferent portion of the loop, removing the strangulation in either case. Experiments on the cadaver have amply proven these results. The danger of gangrene is to be cautiously guarded against; persistent, violent, or even considerable pain is sufficient cause to discontinue the bandage. If, after the use of this bandage for ten to

twelve hours, no symptoms of improvement appear, the uselessness of this treatment must be acknowledged, and other means resorted to. Jakowlew reports the successful employment of the bandage in five cases out of six, though in some cases grave symptoms and failure of taxis had preceded.

THE EARLY TREATMENT OF HIP-JOINT DISEASE.

After briefly commenting on the four allied subjects, viz.: 1. The often tubercular nature of this chronic disease; 2. The frequency of the occurrence of necrosis and sequestra in its latter stages; 3. The frequent shortening of the limb found in cures of the first stage of the disease; and, 4. The too much overlooked symptoms of reflex muscular spasm and rigidity;—MR. JOHN CROFT publishes some valuable advice as to the early treatment of hip-joint disease in the *Brit. Med Journ.*, June 6, 1885.

First in importance, he lays stress on the maintenance of absolute rest. Simply applying an improved hip-splint does not insure complete, perfect rest; for although it may prevent all movement of the joint, it often fails to take off the weight of the body from the limb, and the weight of the limb from the pelvis or body. So long as the muscles and legs around the joint are not in absolute rest the joint is not functionally at rest. Perfect rest is best obtained by a strictly recumbent posture, combined with a long splint, efficiently applied. It is true that various objections have been urged to the prolonged maintenance of recumbent position, such as the liability to the production of ankylosis, and the danger of absorption of cartilage and bone from ulcers produced by the prolonged pressure of the opposed articular surfaces. Mr. Croft, however, believes that these dangers are over-estimated, as he has never seen ill results from properly-conducted absolute rest. He believes that by absolute rest possible necrosis may be prevented, and that shortening of the limb, which has been seen in not a few cases cured in the early stage, may be avoided. As an indication of the period at which this absolute rest may be interrupted, the absence of muscular resistance or pain on flexion of the thigh furnish symptoms of the most value. The inflammation will then be said to be removed and the case cured.

With reference to local application, Mr. Croft's experience is against the employment of irritants, setons, issues, and the like, though he has found leeching useful in relieving acute sensitiveness and pain in acute attacks. In the same way poultices and soothing fomentations are occasionally needed, but their habitual use is not desirable. The splint which he employs almost exclusively is a modification of Thomas's back splint. He found that the back splint itself was greatly in the way in dressing abscesses and wounds in the second and third stages of the disease, and in the early treatment was much less easily managed than an outside splint, and needed much more looking after in order to prevent its causing splint sores. He prefers the parallel outside splint connected by a chest girdle. The long splint on the diseased side should be about six inches longer than the limb, and it should be furnished with a simple contrivance for making extension. A stirrup is applied to the foot and leg, and this stirrup is fixed to the end of a splint by a strong, elastic band or cord. When firm points of counter-extension are needed, a pelvis girdle is added to the splint, and to this girdle the ends of a perineal strap are attached. The girdle is also useful in preventing or correcting tilting of the pelvis. In all cases of tilting he uses the double splint, but when the disease is not accompanied by this deformity, a single splint is commonly sufficient. These splints are covered in by the bedclothes, are easily managed by mothers, and are portable; that is, patients can be carried in them.

ADONIS VERNALIS AND CONVALLARIA MAJALIS.

These drugs have been clinically tested by DR. GLUZIUSKI (*Przeglad Lekarski*, No. 46–49, 1884) as to their claim of being substitutes for digitalis. Both drugs were given in the form of an infusion, and to meet the usual indications of digitalis. In cases of insufficient compensation, the regulatory effects of both drugs were very conspicuous; the heart-beats became more distinct and quiet, the pulse more tense but less accelerated, the entire cardiac irregularity growing less and less manifest. Besides, the ventricles grew smaller and the heart-sounds more distinct. The quantity of urine voided rose from 300 to 2000 and 3000 c.c. The symptoms of dropsy receded or disappeared wholly. The subjective symptoms likewise visibly improved, especially the dyspnœa and palpitation of the heart. Compared with digitalis,

the latter seems to act more promptly than adonis, and this again excels convallaria. In some cases digitalis was clearly useless, while these substitutes acted satisfactorily. It is both interesting and valuable to know that, provided a few doses of digitalis were given before the substitutes, these showed an intensity of action far superior to the power of digitalis. Both remedies are free from cumulative effects, and are hence very eligible for a protracted use, or in patients that lack medical control.

THE RADICAL CURE OF VARICOCELE.

The difficulty of performing an operation for the radical cure of varicocele, which is at once safe and effective without any prolonged after-treatment, is evidenced by the number of different proceedings which have of late been advocated. Favorable results have been obtained by most or all of these methods where the veins have been simply enlarged; but in the severer cases, especially when accompanied by a relaxed condition of the skin of the scrotum, the benefit derived from the operation has been merely temporary.

The operation which MR. HENRY LEE (*Lancet*, April 18, 1885) has now been in the habit of performing for some years in such cases is as follows: The surgeon's hands and instruments are washed in a solution of carbolic acid and wiped dry. The patient is placed in a convenient position, generally on the left side of the bed, under the influence of ether. A portion of the skin of the scrotum is then pulled up and removed, either by curved scissors or by a knife. The longest diameter of the wound should be transverse. The edges of the wound separate to a considerable distance. The enlarged veins are rolled between the finger and thumb, and can easily be distinguished from the vas deferens. Should there be an artery of any size among the veins, its pulsations can be felt, and in that case it is separated from the veins before the operation is continued. A hare-lip needle is then introduced through the wound under some of the veins, and a figure-of-eight ligature tied round its ends over the veins. The same thing is done with another needle about half an inch distant. A thin knife is then introduced on the flat beneath the veins, its edge turned towards the surface, and the veins divided. An ordinary iron cautery, previously heated in the fire, is dabbed on a wet sponge until very little steam is produced; the cautery is then applied to the extremity of the divided veins, and allowed to remain quietly in contact with them for a quarter or half a minute. The tissues adhere firmly to the iron and to each other, and the blood is firmly coagulated in the veins. In order not to disturb the parts by unnecessary violence, the tissues are gently separated from the cautery by the handle of a scalpel. The needles placed under the veins are now removed, and the edges of the wound brought together by short, fine hare-lip pins, or by a continuous suture of carbolized catgut. The loss of blood in this operation often does not exceed a teaspoonful. The part generally heals in great part by first intention. The cautery applied as described produces no slough. The charred surface is absorbed, as are also the clots in the veins. At the end of forty-eight hours the patient may be removed to a sofa, and may leave the house within a week.

The only inconvenience that has arisen from this operation is that in some instances a portion of the wound has been long in healing; but this is accompanied with no pain, and does not prevent the patient going about his usual avocations. It may, however, be not altogether a disadvantage to allow the wound to granulate, as the longer that action continues the firmer will be the cicatrix. The one danger in operating for varicocele is absorption by the open mouths of the veins. If these are effectually closed, a wound in the scrotum may be safely treated in the same way as a wound on any other part of the body, and it requires no very particular attention. When a vein is divided by ligature, or if a red-hot cautery be applied, some amount of ulceration and suppuration necessarily takes place. Both these processes are incompatible with the adhesive action, and the latter can only commence when the former has ceased. If a ligature be applied to a vein, a patient is never safe so long as it is ulcerating its way through; and the same may be said when a portion of the vein is made to slough by the application of the red-hot iron or by the galvanic cautery. The caution that surgeons have always shown in dealing with veins affords abundant evidence of the risks incurred if the veins be not absolutely closed. This object is effectually accomplished by the application of the actual cautery as above described. The parts are glued together before the operation is completed, a chemical adhesion of the different tissues takes place, the blood in the veins is firmly coagulated, and the vessels are securely sealed.

ON THE SURGICAL TREATMENT OF ASTHMATIC CONDITIONS.

HACK, of Freiburg, speaking before the Medical Congress at Wiesbaden (April 11, 1885), communicated his experience of nearly six hundred cases of asthmatic conditions (*Beilage zum Centrlbl. f. kl. M.*, No. 20, 1885).

In all these cases a reflex neurosis could be found, either present or having existed some time previous. The nose was invariably the centre of the reflex irritation. In eighty-one cases in which nasal obstruction alone called for surgical interference, it became evident that with the increase of chronic hyperplastic rhinitis, all neurotic conditions, especially asthma, in spite of long existence, had disappeared spontaneously. Hack holds that reflex neuroses may originate whenever the nose is the seat of hyperplastic conditions. In cases where the mucous membrane alone is affected, the usual catarrhal treatment with astringents and stimulants ordinarily suffices to suppress the neurosis, while neuroses depending upon hyperplasia of the deeper cavernous structures invariably require surgical attendance,—*i.e.*, destruction of the cavernous tissues.

CAFFEINE AS A LOCAL ANÆSTHETIC.

According to the Paris correspondent of the *Lancet*, May 23, 1885, DR. TERRIER, guided by the chemical analogy that exists between cocaine and caffeine, experimented with the latter on a dog and obtained complete anæsthesia of the cornea. The next day a workman presented himself at the hospital complaining of great pain in the eye, caused by a foreign body in the cornea. Two drops of a two and five-tenths per cent. solution of the hydrochlorate of caffeine were instilled into the eye, which so completely anæsthetized the organ that the patient felt no pain whatever during the removal of the foreign body. From these two examples Dr. Terrier declared, at a recent meeting of the Société de Chirurgie, that he considered himself justified in concluding that the hydrochlorate of caffeine is as much an anæsthetic as the hydrochlorate of cocaine, and that the one may be substituted for the other in all cases where a local anæsthetic is required. This accords with the experience of Dr. Fauvel, the well-known laryngologist, who considers this possibility of substitution an immense advantage in a pecuniary point of view, as the price of cocaine is still very high, whereas the caffeine is sold at one-fifteenth the price. Dr. Fauvel employs the caffeine to the almost entire exclusion of cocaine, in all pharyngo-laryngeal affections, in a two per cent. solution, a few drops of which are added to a little water, and the affected parts painted with the mixture, which affords almost instantaneous relief. The painting must of course be repeated several times during the day, in order to keep up the analgesic properties of the drug. Dr. Laborde, however, does not consider caffeine a proper substitute for cocaine, as he had tried some experiments with the former alkaloid as well as with theine, and could not obtain the least anæsthesia of the cornea, even with a concentrated solution. Prof. Panas observed lately in his practice that a solution of cocaine instilled into the eye dilated the pupil as much as atropine, which was contrary to what he had noticed before. In seeking the cause of this difference of action Prof. Panas discovered that the cocaine that he then employed was not like that he was in the habit of using. On further investigation he found that the substance in question was the product of the second maceration of coca leaves, and contained a large proportion of hygrine, which possesses mydriatic properties as marked as those of atropine, without the anæsthetic property of cocaine: hence the numbers of failures with some samples of the latter drug.

ON ATMOSPHERIC PRESSURE IN PNEUMATIC CHAMBERS IN ASTHMA.

Although the proper understanding of the laws of pneumostatic pressure without and within the body has given rise to various contrivances intended to utilize atmospheric or reduced pressure for therapeutic purposes, they found, like other procedures lacking simplicity, but little practical employment. LIEBIG, of Reichenhall, at the Wiesbaden Congress insisted upon the priceless advantages to be gained from the pneumatic chambers in cases of serious asthmatic difficulties.

The desired effects in the treatment of asthma with a pneumatic apparatus are,—

1. To facilitate inspiration, viz., to take a deeper breath, or to increase the capacity of the lung to hold air.

2. The after-effect, namely, to render the improved respiration permanent.

The rapid appearance of an easier respiration of dyspnœa patients is very striking when exposed to the heightened pressure of the pneumatic chamber. The absolute length and depth of the inspiration show a sudden

increase, though on a closer examination this prolongation of the respiratory act is solely due to the retarded and lengthened expiration, while the inspiratory act will be found actually to be shortened. The physical causes of these phenomena are very plain. The facilitated inspiration depends upon the principle of equalization between the high external and low internal pressure rendering the act both easy and quick, while the retarded and deepened expiration depends upon the greater resistance which the expired air finds from without, and the consequent retardation of the pneumonic contractions.

The consequent functional increase of the lung-structure extends even to the finest bronchioles, and permits thus of a quicker admission of air into the air-cells. This is an additional cause for the facilitated inspiration.

The intended after-effect, viz., permanency of the improved respiration, is largely affected by the elastic properties of the lung-structures preventing their return to former dimensions after repeated extension within normal limits.

The susceptibility of lung-extension is various with different persons, those showing greater indifference towards the pneumatic process requiring a longer time of active treatment, as the element of habit plays an important *rôle* in this connection.

In catarrhal swelling of the bronchi, the increased suction-power of the extended lung-structures decreases the bronchial congestion and retards the circulation. Chronic bronchial catarrh is likewise, though of course less rapidly, improved by the pneumatic chambers.

The practical demonstration of an artificially prepared circulatory apparatus, showing the effects of the pneumatic chambers, lent no doubt additional force and power of conviction to Liebig's interesting remarks.

Curschmann, of Hamburg, Riegel, of Bonn, Fränkel, of Berlin, Donders, of Utrecht, Hecker, of Johannisberg, and Schmidt, of Frankfort, took part in the subsequent discussion on the etiology, pathology, and therapeutics of asthma. We regret that lack of space prevents us from abstracting their remarks in detail. The original essays on the subject can all be found in the special supplement of May 20, 1885, to the *Centralblatt f. kl. Medizin.*

Curschmann speaks of the treatment of asthma in two directions:

1. To remove the single paroxysm.
2. To eliminate the etiological factors.

In the treatment of the paroxysm, the narcotics, morphine and chloral, are of course our greatest aids. Next in importance are the preparations of belladonna and the vapors of stramonium, hyoscyamus, and saltpetre-paper. Cocaine is recommendable whenever the asthma is a reflex symptom, radiating from a directly accessible mucous membrane. This remedy may perhaps also be of value as a prophylactic in hay-fever (hay-asthma). In exudative bronchitis, iodide of potassium gives often good results. The pneumatic and operative methods of treatment have been referred to above. In conclusion, reference was made to the so-called "spiral fibres," an almost constant constituent of the expectoration of asthmatic patients; they are usually termed Curschmann's spirals, and form, in connection with Leyden's crystals, an almost characteristic element of a pathognomonic value for asthma, excepting those forms which emanate through reflex irritation from the nose.

THE TREATMENT OF ACUTE EARACHE BY THE INJECTION OF CARBOLIZED GLYCERIN.

The anæsthetic properties of carbolic acid are now much more fully understood and appreciated than some few years ago, though an application of carbolized glycerin to the wound after many operations, and to an exposed nerve in toothache, has long been made use of. Mr. Bendelack Hewetson (*Lancet*, April 18, 1885) has found that the injection of a small quantity of carbolized glycerin into the ear in cases of acute earache almost instantly removes the acute pain. He reports a case of a child, 5 years of age, who was suffering from acute pain from a developing inflammation of the middle ear which was entirely relieved in a few minutes by the use of this application. He states that he has repeated it a number of times both in children and in adults, and that in whatever stage it is applied for earache it invariably stops the pain. If the earache returns, as it does sometimes where a perforation has taken place and has again closed, the application of the glycerin and the carbolic acid gives great relief and in some cases stops the tendency to recurrence. In cases of earache from periostitis, either in cases of chronic otorrhœa or in uncomplicated cases of inflammation of the external auditory meatus, the relief to the pain is not so rapid, but if the carbolic acid and glycerin be allowed to remain in the meatus the relief is obtained in from ten to thirty minutes. There is one way in which it

may fail to relieve pain at once, and that is in case it is poured too quickly into the external auditory meatus, when the patient has his head aside, with the lobe of the ear in its natural position. In this way the air cannot escape sufficiently freely, and a bubble of air prevents the fluid from reaching the bottom of the meatus. The proper way is to draw the lobe of the ear forcibly upwards and backwards, as in syringing the ear, to straighten the entrance to the meatus, and then allow the fluid to trickle gently down one side, whilst the air escapes up the opposite side. In cases where the meatus is very swollen at its orifice, he has injected the solution up a fine elastic catheter well covered with vaseline to promote its easy passage, and in this way he has relieved earache when it could not be alleviated except by a hypodermic injection of morphine or such means.

He has taken great pains to arrive at the best strength of carbolic acid and glycerin to attain these results, and he finds that weaker solutions do not cure the pain so rapidly or effectually as strong solutions, though, of course, they must not be caustic; he does not, however, state what is the exact strength he employs. The glycerinum acidi carbolici in this form is not strong enough to be caustic, and can be supplied in a severe earache when a perforation exists quite harmlessly.

He has a further suggestion to make as to the applicability of this treatment, but he says he is only able to support his suggestion by a few successful cases which have come under his own observation. He refers to this application as a means of checking disastrous otitis in scarlet fever, as well as to relieve the earache in these cases. He is very hopeful on this point; for in one or two instances where he had an opportunity of applying the glycerin and carbolic acid, when a patient first complained of earache in scarlet fever, and the membrana tympani had begun to redden, the relief to pain was immediate and no perforation took place.

PEPTONIZED SOUP.

The clearer views gained within the last decade as to the functions and mechanism of the digestive organs, have gradually led to the dietetic if not therapeutic use of artificially prepared but otherwise natural products of digestion, especially the albuminates. Among the most popular peptonized preparations are the Dutch article of Sanders—Ezn (*Wien. Med. Bl.*, 1880, No. 32); the English fluid meat (*Zeitsch. f. Biologie*, xv., p. 485); the French articles of Catillon (*La France Méd.*, 1881, No. 2), of Chapoteaut (*Jour. de Thérap.*, 1880, No. 20); among the solid preparations, Derby's peptone, and the chocolate peptone of Adamkiewicz.

Reviewing the entire list of hitherto employed peptonized articles, their usually unpleasant flavor and taste must be regarded as a serious objection. Knowing how easily peptone undergoes decomposition, forming ammoniacal bases of a repulsive taste and odor, we cannot conceive of any other effect of the ingestion of such preparations than an increase of the gastric irritation. The high price of the above-mentioned preparations is an additional cause of welcoming any new peptonized article of diet which, at a low cost, combines high concentration and pleasant taste and odor.

The peptone-soup discovered by JAWORSKI (*Zeitschrift für Therapie*, March, 1885) corresponds perfectly to all reasonable requisites of an ideal peptonization. In the full appreciation of the practical importance of this subject to every practitioner, we publish here the detailed recipe of Jaworski's peptone-soup.

Take every evening beef or veal without bone, fat, or sinew (about 1 kilogramme), and scrape it with a dull knife until a quantity of 500 grammes is obtained. Place the scrapings in a vessel of porcelain or earthen-ware (not metal), pour on it 1 litre of water (best snow or rain water), and stir it with a wooden spoon. To this mixture add gradually 50 grammes of diluted hydrochloric acid (c. p.) under constant stirring, and having finally added ½ gramme of soluble German pepsine, stir the mass vigorously. The pot is left overnight on or near a moderately warm stove, and is stirred at times. In the morning the mass is stirred and cooked by a moderate heat until a homogeneous body results (one to two hours). The fat swimming on the surface is then removed, likewise all thready portions, and the mixture treated with a soda solution (10 grammes of carbonate of sodium to 100 grammes of water) until the taste is merely faintly sour.

Some patients take the soup readily in this form, while others require addition of sugar, wine, cognac, rum, or flour roasted in butter, according to individual tastes. The soup tastes best if slightly sour and warm, hence it is not to be completely neutralized, and to be well warmed before being taken. A quantity of soup prepared from 500 grammes of scraped

meat is usually sufficient for one day's nutrition, but has, in warm weather, to be prepared fresh; the addition of ½ gramme salicylic acid renders a large supply of soup intact. The salutary effects of this peptonized soup obtained by Jaworski and his colleagues, Poniklo and Wilkorz, for a number of years are sufficient evidence of the positive therapeutic value residing in this mode of nutrition. It is peculiar that the protracted use of the soup even for six or eight weeks occasions no subjective antipathy on the part of the patient nor any undesirable effect whatsoever.

The following cases reported by Jaworski may tend to better illustrate both indications and effects of the peptone-soup:

1. Case of gastric catarrh. The soup given for six weeks with results of (*a*) increase of lost appetite to voraciousness, the usual phenomenon notable after the beginning of the peptone-soup; (*b*) disappearance of subjective gastric troubles; (*c*) increase of bodily weight (3 kg.).

2. Gastralgia in phthisical patient. Soup given three times daily for three weeks; pain removed; appetite returned; patient succumbing ultimately to the lung-affection.

3. Recurrent perityphlitis. Soup given as exclusive diet for six weeks; perfect recovery.

4. Repeated hæmatemesis. Soup given for two weeks with good results.

5. Hæmatemesis returning at ingestion of any food, even the peptone-soup. The latter given per rectum for twelve days; later ingestion per os feasible; perfect recovery.

6. Carcinoma of cardiac orifice of stomach compelling the use of the stomach-tube. Soup given as enema for four weeks with tinct. opii; bodily weight was not reduced during this time.

In using the peptone-soup as an enema only one-half of the stated quantity of HCl is to be used; the sour taste is to be entirely removed by the soda solution, and the carbonic acid by cooking.

There appears to be actually no contraindications for the use of the soup; but the number of positive indications is legion. All gastric affections are particularly benefited by the soup, on account of the absence of irritation subsequent to the introduction of food into the stomach. In the diseases of the intestinal tract the usefulness of peptones is very evident from the fact that the principal seat of digestion is affected, and hence the general nutrition is materially lowered unless rebuilt by the most concentrated and assimilable article of diet.

In all fevers and phases of reconvalescence, anæmia, chlorosis, in fact, in all conditions of a reduced or weakened nutrition, the peptone-soup furnishes an article of diet unrivalled in nutritive strength, ease of assimilation, and absence of untoward effects. We feel convinced that a careful perusal of Dr. Jaworski's article will induce every practitioner to give the peptone-soup a conscientious trial under appropriate conditions.

THE TREATMENT OF PERITONITIS.

At a recent meeting of the New York Academy of Medicine, a paper was read by Dr. T. H. Burchard (*Boston Med. and Surg. Journ.*, June 25, 1885) on the medical and surgical treatment of peritonitis. After considering the conditions which warrant surgical interference, and reporting a case of omental abscess in which laparotomy was successfully performed, he devoted considerable time to the discussion of certain points in the medical treatment. In his opinion opium had been rightly considered our sheet-anchor in peritonitis, but there were certain conditions in which it could be used only with the greatest caution. Such was the condition of initial collapse, which was dependent on vaso-motor paresis; so that larger doses of opium would be very dangerous in it, though in small quantities it might be used with advantage. Whenever there was danger of cardiac or respiratory failure it was always advisable to give opium or morphine in small doses and in combination with atropine, digitalis, ammonia, or alcohol.

He had found that by far the most accurate and satisfactory method of administering morphine was by hypodermic injection. Atropine was unquestionably the one drug which could be most implicitly relied upon in the treatment of collapse, and it might be given in doses varying from $\frac{1}{60}$ to $\frac{1}{10}$ of a grain, either alone or in combination with one of the agents just referred to. There was no rule for the quantity of opium to be given in peritonitis. Each case must be a law unto itself. Since adopting the hypodermic method, however, he had been surprised to find how comparatively small an amount was required in a large proportion of cases. In some instances, however, enormous quantities of the drug were called for. Poultices had no effect in controlling inflammation, but were sometimes of service in fulfilling special indications. The external application which was by far the most efficient

in this disease was the iced coil. The cold thus applied was directly efficient by causing reflex contraction of the blood-vessels. Peptonized milk was, as a rule, the best food that a patient suffering from peritonitis could take. In speaking of the treatment of tympanitis he said that pneumatic aspiration of the intestines was neither philosophical nor safe. The insertion of a rubber tube by the rectum was sometimes very useful in relieving the patient of troublesome gas. Turpentine was to be condemned on account of its irritating effect upon the kidneys, and cases had been noted in which its employment gave rise to albuminuria.

In the discussion which followed, DR. A. L. LOOMIS remarked that he was one of those who did not believe in such a thing as idiopathic peritonitis, and he therefore agreed with Dr. Burchard in the opinion that the first and most important point to be determined was what the exact cause of the trouble was. There were three principal varieties of cases: first, those of the constitutional variety, depending on blood-poisoning of some sort; second, those which resulted from an extension of inflammation from some viscus to its peritoneal covering; and, third, those depending on ulceration of the intestines, with perforation and discharge into the peritoneal cavity, or upon the rupture of an abscess or cyst of some kind. So far as his experience went, he had yet to see a case of recovery when there was unquestionably the presence of gases from the intestines in the peritoneal cavity. It was often very difficult to determine just when the perforation had occurred, and he did not believe that the exact portion of the intestine involved could always be made out. If, however, this could be determined, he heartily agreed with the author of the paper as to the advisability of operating. If he believed that he himself was the subject of ulceration of the vermiform appendix, he did not hesitate to say that he would at once seek out a surgeon who would promptly open the abdomen. In regard to the medical treatment, he thoroughly believed in opium, though with restrictions. Dr. Burchard's point had been well taken, he thought, and he also considered the indiscriminate use of the drug in the early stage of the disease often highly dangerous. Long ago he had adopted the plan of guarding the first doses of opium with atropine. Afterward the matter was not of so much consequence.

DR. R. F. WEIR said that the arena of the abdominal cavity was that in which surgeons had been striving most actively during the last ten years. Dr. Loomis had touched the key-note when he said that there was no such thing as idiopathic peritonitis. He would go further than the author of the paper and say that, in his opinion, no patient suffering from peritonitis should be allowed to die without an exploratory incision. Perforation with collapse was the snag on which surgeons were apt to get caught. In a traumatic case they could not tell whether this collapse was due to the entrance of gas into the peritoneal cavity or resulted from hemorrhage. Here came in the value of exploratory incision, and in ninety-four such exploratory incisions Tait had had but three deaths. After the incision had been made it could be decided whether to proceed further or not, according to the condition of affairs discovered.

The president, DR. A. JACOBI, said that in perityphlitis there were some cases in which the inflammation remained purely local, while in others, although general peritonitis ensued, the patient recovered; and therefore it was a question of great responsibility whether to operate or not. Very recently he had seen a boy of 15 who had all the signs of perityphlitis, and although the question of operation naturally presented itself, he had deemed it advisable to wait; the patient in the mean while being treated with morphine, atropine, and plenty of ice. The peritonitis afterward became general, but the symptoms were not very urgent, and so again he hesitated to operate, because the general condition was such as to justify waiting a little longer. It was certainly a very difficult question to decide; but he had seen a number of similar cases recover, without operation, as this boy did. He had found that whenever a case of peritonitis became rapidly well developed, the patient had almost invariably had one or more previous attacks. He would be inclined to lay down the rule that when perforation and peritonitis set in very suddenly and the trouble extended rapidly, the operation ought to be performed; but if the process was a slow one, it was advisable to wait.

DR. BURCHARD said that in six cases of typhlitis which he had seen ending fatally,—in five of which he made autopsies,—it was a fact that in every one of them there was a history of one or more preceding attacks. If he saw a patient in collapse, or partial collapse, with a history of previous attacks of typhlitis, he would say that there was a perforation, especially if the individual had recently been suffering from constipation and had taken ca-

thartics freely to get rid of it. The rapidity with which the collapse developed also offered an indication as to whether there was perforation or not.

BACILLI OF SYPHILIS.

There is no longer any serious doubt as to the existence of specific germs of syphilis. LUSTGARTEN, of Vienna, had previously written several articles on the subject, but it required the practical demonstration of the bacilli at Wiesbaden to make his discovery an established and generally accepted fact.

The new micro-organisms, according to Lustgarten's own description in the *Centralbl. f. kl. M.*, No. 20, 1885, are very distinct and individual as to morphological structure and the dye-process, for particulars of which we have to refer our readers to the journal quoted. Lustgarten regards them as capable of active locomotion, as he observed them not only in the specific infiltration and neighboring normal cellular tissue, but also in the rete Malpighi (case of specific papules), and in the lumen of a lymphatic vessel (case of sclerosis). Our author found the microbe in each of sixteen cases which he had examined up to date, and is hence justified in claiming the same diagnostic importance for it as Koch's bacilli have for tuberculosis or cholera.

Their specific nature will no longer be doubted if, as Lustgarten, Fürth, and Mannaberg have frequently observed, their number decreases visibly in a secretion specimen (ten cases) after even a short specific treatment, whether local or constitutional.

The actual *modus propagandi* of the specific poison from the point of infection, hitherto a subject of great uncertainty and discussion, will no doubt be in time fully elucidated through special observation of the syphilitic bacilli.

The fact that they are found included in lymphoidal cells, endowed, as intimated above, with active locomotion, that they are observed in the apparently healthy cell-tissues immediately bordering on the specific infiltrations, and finally their strange appearance in a closed lymphatic vessel, strongly support the theory that the lymphatic system is the primary, the general vascular system the secondary, medium of propagation for the virus from the point of inoculation.

The presence of the syphilitic bacillus in the rete Malpighi is of intense theoretical interest and coincides with the clinical observation of many practitioners, that syphilitic infiltrations need only be deprived of their epidermis to become infectious (wet papule). In conclusion, we refer to Lustgarten's observation of these bacilli in the typical gummatous infiltrations, and we are compelled hence to include these in the specific syphilitic affections. As is well known, the majority of syphilographers have done so before, while several, on the ground of a few negative vaccination experiments, and with a view of the usually healthy offsprings of syphilitic patients in the gummatous stage, declared the gumma the product of a syphilitic or even mercurial cachexia. Ricord has been a strong defender of this faith, though it is hard to see why a person having somewhere in his system a syphilitic focus should not have healthy spermatic cells and hence procreate healthy—*i.e.*, non-syphilitic—children.

A NEW REMEDY IN GOUTY OBESITY AND DYSPEPSIA.

One of the earliest, if not a primary error of function in gout, whatever may be the real cause of that malady, is failure of the liver to secrete sufficient or normally constituted bile. The product of liver-function is, as we know, only partly excreted, the greater portion of the bile being reabsorbed in the intestines, and we further know that one of the functions of the bile is to facilitate the proper digestion and assimilation of fat. If fat be not duly assimilated it will be deposited crudely, as in the omentum and elsewhere, with the result of obesity coupled with deficiency of heat production and maintenance, which is a very different thing from obesity with full or even excessive powers of calorification. It is certainly important to make this discrimination between two distinct and totally different classes of cases. In the former case, common with persons with an inheritance of gout, in which there is obesity with a low grade of heat-force, DR. J. MORTIMER GRANVILLE (*Lancet*, April 25, 1885) has been giving the biliary salts extracted from ox-bile in the form of a pill, and he states that the results of this treatment are very striking. The stools are rendered characteristically rich in bile without purging, the food is readily digested, and the accumulations of fat seem to melt slowly away. The taurocholate of sodium with the glycocholate of sodium are readily obtained from ox-bile by evaporating to dryness and pulverizing, making an alcoholic extract, filtering, and precipitating by small successive additions of ether. The deposit is non-crys-

tallizable so far as the taurocholate of sodium is concerned, while the glycocholate of sodium appears, if the deposit be left to stand, in acicular crystals, forming themselves into rosettes. With any suitable excipient the mass may be readily made into pills, each containing about 4 grains of the taurocholate, and coated so as not to dissolve in the stomach. One should be given with each meal or immediately after food. The effect of this new remedy both for defective digestion and assimilation, and for obesity in cases in which fat is accumulated instead of being burnt off in the system as nutritive fuel, will, he claims, be found highly satisfactory.

MASKED ARTICULAR RHEUMATISM.

The congress at Wiesbaden, assembling as it did the world-renowned exponents of the therapeutic science, was justly expected to be a rich harvest of novel, theoretically interesting, and practically useful scientific data.

Among the papers which met with universal attention was one read by DR. H. IMMERMANN, of Basle, entitled "Masked Articular Rheumatism."

This author has repeatedly observed cases of acute neuralgia of the trifacial nerve which entertained the same relationship to acute articular rheumatism as masked malaria (the malarial element) does to intermittent fever, and which he hence thought could be properly called masked articular rheumatism. The same causes, namely, of an infectious miasmatic nature probably, which usually give rise to acute polyarthritis, occasionally produce acute neuralgias or neuroses, which, however, etiologically at least, belong to the rheumatic category. The term "rheumatic neuralgia," though, would not be precise enough, as many local troubles caused by a cold are included in the affections of a rheumatic nature.

Diagnostically we have to note the etiological factors of the neuralgia, the clinical history, and lastly, the therapeutic achievements. In one of his patients, for example, he observed simultaneously an intense neuritis of the second trigeminal branch and an acute endocarditis of the mitral valve at a time when articular rheumatism was epidemic (!) in Basle. The diagnosis of masked polyarthritis was confirmed by the prompt improvement and ultimate perfect recovery following the exhibition of salicylate of sodium. Immermann recommends the trial of the salicylic salt even when the etiological and symptomological features are less palpable, especially when on account of certain general appearances (fever) the neuritis does not seem to refer to any local disturbance. Interesting is the author's assertion that antipyrine seems also possessed of specific properties against polyarthritis. In one case of acute supraorbital neuralgia of a febrile type, all pathological features disappeared at once after the ingestion of 1 drachm of antipyrine. To summarize the author's views, we learn that, 1, the etiological factors usually causing acute articular rheumatism may occasionally produce acute neuritis (trifacial); 2, these masked forms of rheumatic arthritis may, as in the ordinary type, be attended by high fever and acute endocarditis; 3, they yield also to a specific treatment with salicylate of sodium or antipyrine. Immermann's interesting remarks were confirmed by other authorities, who, like Edlefsen, of Kiel, had frequent opportunity to observe the simultaneous appearance of neuralgia and articular swelling, and readily assented to the general acceptance of a masked form of rheumatism.

COCAINE IN EARACHE.

It is the fashion now to use cocaine in all imaginable aches and pains, and were it not for the high price of the drug there is little doubt but that it would be used still more indiscriminately. It is now almost established that its use should be confined to applications to mucous membrane, and DR. A. HOBBS (*Southern Medical Record*, June 20, 1885) shows how cocaine may be used so as to relieve earache, in spite of the fact that the drum-head is skin and not mucous membrane.

Dr. Hobbs states that a physician lately said to him that he was greatly disappointed with cocaine, because he had used a strong solution in a case of "earache" without any effect. As well might he have rubbed the same solution upon the skin of the finger to ease the pain of a bone-felon. He had proceeded upon the principle that the external layer of the drum-head was mucous membrane and not skin, and that the cocaine would penetrate the membrane and gain access to the lining mucous membrane of the middle ear,—the seat of the pain in so-called earache.

The case alluded to above was seen by Dr. Hobbs while the pain from an acute inflammation of the middle ear was still in its acute stage. The pain was almost immediately relieved by the application of cocaine, not through the external auditory canal, but through the Eusta-

chian tube. Two drops of a two per cent. solution was placed in a warmed silver Eustachian catheter and blown into the tympanum. The pain returned, but in a less degree, in about two hours, when two drops of a four per cent. solution were inserted, which gave him ease for eight hours. After this the pain was controlled by spraying a solution of cocaine and glycerin into the corresponding nostril and immediately resorting to Valsalva's method of inflation.

Dr. Hobbs has treated six other cases in almost exactly the same manner as the above case, and the desired result was gained in a greater or less degree in all.

In the intervals, the conventional hot applications of morphine solutions and laudanum (not laudanum and sweet oil) should be used. Saline cathartics should also be used, and if fever runs high tincture of aconite-root in small doses may prove useful.

PYRIDINE.

M. GERMAIN SÉE has recently made a very important communication to the Académie des Sciences de Paris on the treatment of asthma, both of the pulmonary and of the cardiac form, with a new remedy called pyridine (*Revue Scientifique*, June 6, 1885). The only curative medication of pulmonary asthma (with the usual nervous element) is the treatment with iodine, as can be shown by the statistics of three hundred and seventy cases observed within the last seven years. The restoration process depends upon what Sée terms "l'ioduration" (*i.e.*, saturation with iodine) of the lungs and the nervous system. Compelled by the occasionally observed intolerance of the drug or its failure when used to resort to the empirical use of other drugs, Sée studied among others the physiological action of pyridine with special reference to its influence over asthma. This substance, the formula of which is C_5H_5N, is a colorless liquid, evaporating on exposure, and emitting a peculiar penetrating odor, such as is noted in the dry distillation of organic matters, as cod-liver oil, and of certain important alkaloids, as cinchonine, quinine, and morphine. The same odor is also to be found in the products of condensed tobacco-fumes and of nicotine itself.

In his experiments Sée used a rather peculiar method of applying the drug, viz., by aspiration. Four or five grammes of the drug are evaporated in a small closed chamber of about twenty-five cubic metres, the inhalations lasting from twenty to thirty minutes and being repeated three times pro die.

The following conclusions embrace his observations made on fourteen persons (three women and eleven men, aged from 30 to 68 years):

1. Iodism constitutes the true curative method of treating asthma, no matter of what form or origin. Pyridine is the most certain agent of bringing relief when iodine fails.

2. Pyridine is superior to the hypodermic use of morphine, its action being more lasting and better borne by the system.

3. In nervo-pulmonary asthma the ailment can be thus stopped completely; in cases complicated with permanent pulmonary lesions the treatment has to last eight to ten days so as to render the obtained improvement permanent. In all other forms (especially cardiac, simple or complicated with renal lesions) pyridine renders great service in subduing the most persistent and painful symptom, viz., oppression, either constant or paroxysmal.

IODIDE OF POTASSIUM IN CUTANEOUS SYPHILIS.

DR. HENRY W. STELWAGON reports in the *Medical News* for June 27, 1885, a case of a late cutaneous syphilitic eruption which illustrates the occasional necessity for the use of large doses of iodide of potassium. The patient was a male, on the right side of whose nose, near the junction of the ala with the cheek, there were three or four papular elevations, the apices of which were slightly depressed, with a central point of suppuration. Each lesion was about the size of a small split-pea. In appearance they resembled abraded acne papulo-pustules. There was some infiltration, with more or less redness. On other parts of the nose, and in the immediate neighborhood of the same, were several small pea-sized, shallow scars, the remains, evidently, of recent lesions. At a point near the base of the nose was an acne-like papulo-pustule. The eruption had made its appearance three months previously. The forehead presented scars similar to those about the nose, except that they were much paler and less distinct, and in other ways showed that they were remains of an eruption of some years past. No other symptoms presented. Questioning elicited that the patient, fifteen years ago, had had a venereal disease, which

he had always considered simply a gonorrhœa. So far as the patient remembered, there had been no symptoms of cutaneous disturbance until eight years later, when the eruption on the forehead made its appearance. At this time, also, there appeared a suppurating, gummatous swelling upon the left forearm, the scar of which is still plainly visible. After a few months' treatment the eruption and the gummatous ulceration disappeared, leaving the cicatrices already mentioned. Since then, up to the time of the present eruption, patient had enjoyed his usual good health, and had observed no other symptoms, either objective or subjective.

Patient is a married man, and the father of four children, three of whom died in the first two months of life; the fourth is still living, and is perfectly healthy. The wife, so far as he is cognizant, has never had any cutaneous disease, or shown any symptom which could be looked upon as suspicious.

The diagnosis of syphilis was made, and patient placed upon potassium iodide and the red iodide of mercury, 5 grains of the former and $\frac{1}{24}$ of the latter, three times daily. An ointment of 30 grains of white precipitate to the ounce of lard was ordered for local application. In the next two weeks a few new papulo-pustules appeared on other parts of the nose, somewhat inflammatory, and with considerable surrounding hyperæmia. The other lesions were slowly retrograding. The dose of the potassium iodide was increased to 10 grains, and that of the mercury to $\frac{1}{16}$. Two weeks more passed, and the eruption still remained uninfluenced, new lesions slowly appearing, and the old ones as slowly disappearing. A shallow depression and scar marked the site of each disappearing lesion. When two or three lesions existed close together, the intervening skin was slightly reddened and infiltrated. With the eruption there was more or less papillary and connective-tissue hypertrophy. Indeed, the resemblance to acne rosacea was striking,—the papulo-pustules, to a certain extent, simulating the acne lesions, and the superadded redness and hypertrophy, together with the presence of a few small dilated capillaries, completing the picture. The iodide was now increased to 20-grain doses, with an increase also in the mercury biniodide. No change taking place in two weeks, the iodide was still further increased to 30 grains three times daily. Fourteen days under this dose showed no appreciable improvement.

The patient had now been under treatment two months, and the character and course of the disease remained unchanged, the older lesions disappearing, and new ones appearing, evolution and involution taking place very slowly. At this time there were probably more lesions present than at the beginning of the treatment. There were several on the parts adjacent to the nose, and the hyperæmia had increased. So striking was the resemblance to acne that the case was again carefully investigated, but with the same diagnosis resulting. The same treatment (30-grain doses of potassium iodide and $\frac{1}{12}$ of a grain of biniodide of mercury) was continued a month longer, but with no benefit. The local treatment was changed from time to time, the oleate, corrosive sublimate, red oxide, and the ordinary mercurial ointment all being tried.

In desperation, the above plan of treatment was discarded, and the case treated as acne. At first there seemed slight improvement. The disease, however, continued, and after several weeks of varied treatment the result was negative. About this time there appeared a slight nodular swelling of the left ulna. The first impression of the nature of the eruption was thereby confirmed, and the antisyphilitic treatment resumed. Beginning with 30-grain doses of the potassium iodide and $\frac{1}{12}$ of the mercury biniodide, the former, two weeks later, was increased to 40-grains three times daily, and continued fourteen days. The nodular swelling disappeared, but the eruption was but slightly, if at all, influenced. The dose was now increased to 50 grains, and, no improvement resulting, to 1 drachm. It was not until the drachm doses were given that any change was noted.

From this time forward, however, the improvement was marked, and within three weeks after this dose had been reached the eruption had practically disappeared. Up to the present time there has been no relapse. The scars, of course, still remain, and resemble in size, character, and appearance those observed to follow the so-called atrophic acne. There remains also more or less papillary hypertrophy. Up to the date of the administration of drachm doses the eruption had fluctuated slightly from time to time, remaining, however, essentially the same; never violent, but of an indolent character. Strange to say, the stomach stood the large doses admirably. Nausea and irritation occasionally occurred, but seemed to be produced by the menstruum rather than by the potassium iodide, as a change of such was always fol-

lowed by a disappearance of the gastric uneasiness.

ON GONORRHŒAL RHEUMATISM.

The scepticism with which the early discoveries of specific disease-germs were treated is gradually subsiding in proportion to the persistent increase in the number of diseases with a distinctly microbic nature. There can be no further reasonable doubt but that these microbes are virtually of a specific nature,—*i.e.*, that each type belongs exclusively to one affection; quite another question, and one which cannot yet be definitely answered, is, whether these germs are actually the cause of the disease (and its only cause), or whether they simply serve as an exponent of certain tissue-changes; or are, in other words, not the cause but the result of the disease. In pneumonia the latter would seem the case, while in the gonorrhœal affection the former supposition appears more plausible.

Inflammatory rheumatism and gonorrhœa being referable to microbic origin, the mystery as to the etiology of gonorrhœal rheumatism is obviously cleared up when the specific gonococci of gonorrhœa are found in the secretion taken from the joint of a patient suffering from rheumatism with an existing or latent gonorrhœa.

This observation has been made by KAMMERER (*Chir. Centralbl.*, xi. 4, 1884; *Schmidt's Jahrb.*, No. 1, 1885) on a patient in whom an injury resulted in arthritis. A slight chronic discharge from his urethra revealed the presence of gonococci, which subsequently could also be found in the exudation of the joint, secured by acupuncture under antiseptic precautions.

In another case observed by the same author, in which likewise an injury produced an inflammation of the knee-joint, no gonococci could be found in the joint-exudation, while their presence could be easily determined in the secretion of the inflamed urethra.

THE USE OF HYPODERMIC INJECTIONS OF FOWLER'S SOLUTION IN MULTIPLE SARCOMA OF THE SKIN.

In the *Boston Med. and Surg. Journ.*, June 25, 1885, DR. FREDERICK C. SHATTUCK reports an interesting case of multiple sarcoma of the skin which was completely cured by the hypodermic injection of Fowler's solution. The case was that of a woman, 31 years old, of previous good health, and by occupation a dressmaker. Seven months before the date of her admission to the Massachusetts General Hospital (July 26, 1883) she had commenced to suffer from pain along the lower jaw, and soon after noticed swelling behind the angle of that bone. About two months later nodules appeared in the skin over her right shoulder, then on her right arm, next on the left, next on the abdominal wall. She thinks that the appearance of the nodules was preceded by local tenderness, and followed by discoloration. Recently she noticed that her face was fuller than normal, and she began to suffer from pain in the cardiac region. She was somewhat short of breath on exertion, and reported that she had lost decidedly in strength, though not in flesh. The bodily functions were in fairly good order. The pulse was 120, regular, rather weak.

On examination, it was noted that the patient was pale, with some œdema of the eyelids and face, preponderating on the right side. Scattered throughout the skin of the upper extremities and the body as far as the umbilicus were hundreds of nodules, mostly about the size of a pea. Over the inner aspect of the arms the nodules were discrete, not raised above the surface, slightly tender on pressure; the skin could be wrinkled over them, and was not discolored. On the outer hand, over the shoulders, outer aspect of the arms, breasts, upper abdomen, and back—though in the latter situation to a less degree—the nodules were so thickly sown as to form large masses or plates, very hard, and but very slightly tender. The skin covering these could not be pinched up or wrinkled, and was markedly erythematous, with slight scaly desquamation of the epidermis. In the legs a very few nodules could be felt, and there was no erythema. The glands at the angles of the jaw were enlarged, but those of the axilla and groin were apparently normal. Thorough examination failed to reveal any material modification of the great viscera. A diagnosis of multiple sarcoma of the skin was made.

General tonic treatment was prescribed at first, but Köbner's brilliant success in a similar case with the subcutaneous use of Fowler's solution led to the adoption of his plan of treatment. An injection of 4 minims, subsequently increased to 6 minims, diluted with an equal quantity of water, was given once daily, deep in the thigh. The general health of the patient improved, a few fresh nodules appeared, but the old ones disappeared in much larger numbers, and November 3 she was discharged from the hospital, in order

that she might work a portion of her time. She came daily to the hospital, however, for her injection until she was furnished with a syringe and taught its use, and treatment was persisted in steadily till the middle of March, when an abscess in the thigh was opened, the only one which formed during the whole time. A few nodules still remained, but the masses which filled the skin over the breasts, abdomen, and outer side of the upper arm had entirely disappeared, and during the past year she has been under observation from time to time without any treatment whatever, and has worked steadily at her trade. Dr. Shattuck states that he has seen her recently, and she remains perfectly well to all appearance.

Early in 1884 he showed her at a meeting of the Medical Improvement Society, but has purposely allowed a year to elapse before reporting the case, in order that there might be no doubt as to the result.

Cases of multiple sarcoma of the skin are rare, and the authorities on diseases of the skin have little to say on the subject. All agree that the prognosis is absolutely unfavorable, and the course generally a rapid one. Köbner's is the only case recorded up to date in which recovery took place.

ON PURULENT AND GONORRHŒAL CONJUNCTIVITIS.

WIDMARK has made extensive observations of cases of conjunctivitis with the view of ascertaining the presence of microbes (*Hygiea*, 6, 9, pp. 404, 592, 1884; *Schmidt's Jahrbücher*, No. 1, 1885). Of four cases in adults he found gonococci in three; in eighteen cases of ophthalmia neonatorum, gonococci appeared in twelve of them. The microbes were either free in the secretion or attached to the pus-cells and their nuclei. In three cases they were found joining the epithelial cells. After a certain time they were noted to disappear, though the catarrh continued. We gain certain important hints for the practice from these observations. It seems possible, then, to abort the disease immediately after infection, as long as the gonococci are in the stage of latency of development.

NEW REMEDIES.

At the recent Medical Congress at Wiesbaden BINZ read a paper on some new remedies, from which we abstract the following:

Nitrite of Amyl.—Merck, of Darmstadt, prepares small capsules filled with a few drops of amyl nitrite, which are crushed in the handkerchief and then inhaled. (These capsules have been known for years in America.)

Binz reports a case in which the remedy promptly aborted agonizing paroxysms of angina for over five weeks, and was often inhaled twenty times pro die. The patient died ultimately, showing atheromatous and myocarditic degeneration of the heart as the cause of the angina. The complete harmlessness of the drug, as demonstrated in this case, advocates an extension of its employment beyond purely nervous stenocardia.

Arbutin and Hydrochinon.—Our readers know that the former is the crystallizable glucoside of uva ursi, non-toxic even in as large doses as two drachms. Hydrochinon is produced by fermentation from the former. Both drugs check the decomposition of the urine, and thus improve vesical ailments. Given recently in a case of vesical catarrh of nine years' standing to an old gentleman of 68, arbutin proved a valuable drug. Its dose is 15 grains in powder form three times daily.

Eucalyptol, the ethereal oil of eucalyptus globulus, has a peculiar action on the suppurative process. It paralyzes, as has been ascertained, the white blood-corpuscles as soon as they have penetrated the blood-vessel wall during inflammation. The process of tissue-disintegration is hence checked by this drug.

Ichthyol.—This is the salt of ichthyo-sulphuric acid, and is prepared from fossil fish and other organisms. Unna says there is no remedy which, locally applied, is as effective in acute and chronic articular rheumatism as ichthyol. Its principal indications are, according to Kustner, of Halle, eczema, pruritus universalis, acute and chronic rheumatism even when salicylic acid has failed. The drug is rubbed into the skin in a five or ten per cent. solution; others use subcutaneous injections (1½ grains).

Urate of Mercury.—This preparation is a combination of corrosive sublimate and urea ($HgCl_2+CH_4N_2O$), and is made by dissolving fifteen grains of corrosive sublimate in four fluidounces of hot distilled water, and adding seven grains of chemically pure urea to the cold solution. Ease of preparation, cheapness, and constancy are claimed to make this a very desirable preparation of mercury. It is easily soluble in water, and does not precipitate albumen. Subcutaneously injected it causes no pain.

The cyanate of mercury is said to offer

equal advantages, though abscesses have sometimes been caused by its hypodermic use.

ON THE ETIOLOGY OF RHEUMATISM; ITS EPIDEMIC AND INFECTIOUS TENDENCIES.

The circle of diseases with clearly demonstrable or strongly suspected microbic origin is rapidly enlarging, enclosing by this nearly all of the so-called zymotic diseases in addition to syphilis, tuberculosis, diphtheria, pneumonia, cholera, and all septic infections. The time is obviously near at hand when all constitutional affections will be referred to specific germ life.

To include also the constitutional affection known as rheumatism in the number of diseases depending upon microbes is, therefore, scarcely astonishing, especially as the generally adopted etiological views are manifestly unsatisfactory.

Prof. Edlefsen, of Kiel, communicated his views on the subject in Wiesbaden, and largely resorted to statistical data for their direct or inductive confirmation (supplement to *Centralb. f. klin. Med.*, May 20, 1885). In all the author had the clinical history of eight hundred and forty-five cases of polyarthritis observed by himself or by his colleagues. As to distribution for the different months, the maximum number of cases occurred in January, the minimum in February; next to January stands May, then December. This shows clearly that the temperature as such holds no relation to the cause of rheumatism. In 1883, Edlefsen said the number of rheumatic cases in Kiel was so excessive that the idea of their epidemic nature presented itself spontaneously. There were no unusual conditions of temperature that year to account for the excessive number of cases. It was especially surprising that with unusual frequency a large number of cases occurred in one house or in neighboring dwellings. Another observation of importance was that relative humidity checked the disease, while relative dryness favored its development (the same holds true of pneumonia). This led naturally to the assumption that the virus is of organic nature, and that its abode is in the ground-soil. If we accept this hypothesis of the microbic origin of polyarthritis, we ought to advise such patients as have just passed through the disease to change their dwelling, but to avoid houses in which cases are well known to have occurred previously.

Friedlænder, of Leipzig, with the clinical material of three hundred and seventy-one cases of polyarthritis, confirmed the views of Edlefsen in all points. According to this observer, rheumatism is a house-disease like pneumonia, depending upon a microbe existing in the ground-soil of dwellings. That the maximum of cases, as stated above, occurs in January, the minimum in February, can be explained by the ascent of the microbes on account of the heated, hence rarefied and rising, currents of air prevailing in the houses in January, while in February, on account of the continued heating and drying, a certain exhaustion of the subsoil, viz., a diminution of containing germs, naturally ensues. The infectious nature hence of polyarthritis is almost self-evident, as such large clinical material of such eminent observers is entitled to the utmost confidence.

Vierordt, of Leipzig, goes yet a step further, and believes even in the contagiousness of rheumatism. He observed so many instances in the city hospital of what appeared propagation by contagion, that Wagner, the physician-in-chief, ordered the isolation of all rheumatic patients. It is probable, though, that the hospital itself was an infection focus, as was well known to be the case with the old Jacobs Hospital in Leipzig. Friedländer believes the period of incubation of rheumatic polyarthritis to be at least five days.

Reviews.

Minor Surgical Gynecology: a Treatise of Uterine Diagnosis and Lesser Technicalities of Gynecological Practice, including General Rules for Gynecological Operations and the Operation for Lacerated Cervix and Perineum and Prolapsus of Uterus and Vagina, for the Use of the Advanced Student and General Practitioner. By Paul F. Mundé, M.D. Second Edition, Revised and Enlarged, with 321 Illustrations. New York: William Wood & Co., 1885.

In the days when post-graduate courses and special clinical instruction were beyond the reach of the recent graduate, when the student received his degree often without any previous opportunity for personal acquaintance with practical gynecology, when gynecology, in fact, was yet unborn, and the sacredness of the female personality placed all opportunity for such study hopelessly beyond the reach of medical classes, such a work as that of Dr. Mundé's would have been received with simple amazement. In those days the uterine sound was to the student a mystic divining-rod, and his acme of delight

was to gaze through an antiquated speculum at a so-called ulcerated os tincæ, and happy the man who could enjoy so rare an opportunity.

The graduate of to-day starts on his career with a store of practical knowledge in gynecology which his predecessors were years in acquiring, through many an ignorant attempt and many a painful failure; yet to him this book will be an invaluable *vade-mecum*, and to the numberless practitioners who could not or did not avail themselves of their opportunities, who are scattered through the land, away from centres of medical instruction, whose progress must depend on themselves and books, scarcely any work will prove more helpful. The minutiæ of gynecology, the instruments to be used, the method of their use, all are carefully and clearly explained. One may wrap an applicator's point for the first time, and wonder whether he has not done it often in some previous state of existence, and need not revert to the explanation of the duality of the brain, for has he not read it awhile ago in the "Minor Surgical Gynecology"?

In this edition, as in the previous one, illustration has been copiously supplied. The author has added also several chapters upon operations on the cervix and perineum, capitally illustrated, and forming a valuable addition to the book. Throughout the language is clear and carefully chosen, and shows the author a thorough master of gynecological expedients and procedures. E. W. W.

MODERN THERAPEUTICS OF THE DISEASES OF CHILDREN, WITH OBSERVATIONS ON THE HYGIENE OF INFANCY. By Joseph J. Edwards, M.D.
Philadelphia: D. G. Brinton, 1885.

This is a successful attempt to bring together the various methods of practice used by a number of physicians eminent in pediatrics. Thus, under the topic of diphtheria, we find clinical remarks and formulæ contributed by Drs. E. N. Chapman, M. Hager, J. Lewis Smith, Thomas R. Drysdale, James Tyson, Thomas Hillier, H. V. Sweringen, Thomas Hawkes Tanner, Armand Semple, Edward Henoch, Morell Mackenzie, Joseph H. Warren, and many others. Some have contributed short but suggestive articles, and an effort has been made to give something more than formulæ, viz., the rationale of formulæ.

In this hurried age the student can gather in a few minutes a good idea of what experience has taught others,—a far more rapid, we do not say more valuable, way than the finding out for himself. The reader, to profit by such a book, must read it as he needs it, and use it with judgment. It is not a family medicine book, nor is it a mother's guide. Some previous knowledge of doses will be needed. Under Rubeola we find Dr. W. B. Powell is made to recommend in "ordinary cases" a formula containing from $\frac{1}{8}$ to $\frac{1}{16}$ gr. of sulphate of morphine; the directions plainly inferring that $\frac{1}{16}$ is the dose for the smallest patient likely to be met with. The same authority recommends a pill containing $\frac{1}{2}$ gr. opium every two hours where dysenteric symptoms complicate measles, without any warning about the patient's age. And again, on page 112, under diarrhœal diseases in children "over one year, and in those under that age also," we have powders advised containing a scruple of Dover's powder to the dozen, or $\frac{1}{8}$ gr. of opium every third or fourth hour. As this book will be most used by the young and comparatively inexperienced practitioner, some revision is needed. These are all the instances of excessive dose which we have met, and if such doses are used to any great extent, it is no wonder that some authorities condemn the use of opium in the diseases of young children. Apart from this the book supplies a want, will prove exceedingly helpful to many in their earlier years, and to those who have acquired experience by long practice it may bring many new ideas, lifting them out of their own rut, even if it be into the rut of some other plodder in practice.

E. W. W.

ON THE WASTING DISEASES OF INFANTS AND CHILDREN. By Eustace Smith, M.D., London.
New York: William Wood & Co., 1885.

After a general introduction, the subjects treated of are simple atrophy from insufficient nourishment, chronic diarrhœa (chronic intestinal catarrh), chronic vomiting (chronic gastric catarrh), rickets, inherited syphilis, mucous disease, worms, chronic pulmonary phthisis, caseation of lymphatic glands, and a final chapter on diet of children in health and disease. The several previous editions are well known to the medical world, and the present edition, practically a reprint of the author's last (third) edition, will do much to bring it into still further use as an authority. Dealing with a comprehensive group of diseases characterized by wasting, it becomes an invaluable aid to diagnosis in these often obscure cases. It is especially valuable to the practitioner in large cities, or perhaps we might more truly say to the practitioner

wherever he may be located, who has to deal with infant constitutions which have been wrecked by city life. The seaside and country practitioner in the summer finds himself busy with them, while those who wage an unequal struggle with infant diseases in our large cities through the hot months need all the assistance that such books can give.

The book is full of subsidiary information, and, dealing as it does with diseases characterized largely by mal-nutrition, contains the most carefully elaborated and successfully-tested systems of feeding. The chapter on caseation of lymphatic glands is of added interest in view of the growing belief that much may be done by the early surgical removal of such glands when accessible to operation.

E. W. W.

THE CURABILITY AND TREATMENT OF PULMONARY PHTHISIS. By S. Jaccoud, Professor of Medical Pathology to the Faculty of Paris, etc. Translated and edited by Montague Lubbock, M.D. (London and Paris), M.R.C.P. (England).

New York: D. Appleton & Co., 1885.

"Convinced and certain as I am of the curability and possible arrest of this formidable disease, I believe it my duty to communicate in every detail the results, both of my studies and experience." With these brave words our author may be said to begin, and it is the task of the reviewer to lay in brief before the reader the nature of these details and results. In so far as possible we will let the author speak for himself.

Page 2: "The most important question in the treatment of phthisis is the problem of climatic stations in winter and summer." To study this question the author has visited "all such places in Europe,"—Greece, Sicily, Norway, Davos in winter, stations in Asia, Madeira, the Canaries, Morocco, and Algiers. His "conclusions suffer materially from the somewhat routine rules which guide physicians in general in their advice." The author also sets before himself the task of studying the results of the hygiene treatment of phthisis,—the treatment by mineral waters, the "hydrotherapeutic," "aerotherapeutic," and "pneumatic" methods, and the treatment "by inhalation of benzoate of soda, and the effects of salicylic acid used as a febrifuge." Pathologically, the author believes that "tubercle always results from imperfect nutrition," or, as he terms it, "constitutional hypotrophy and distrophy." "That, as regards its mode of production, tubercle bears a decided resemblance to inflammatory products" set up by an irritative process, termed by the author "phymatogenous irritation." Page 7: Inflammation "has a double mode of action." "It hastens the evolution of pre-existing tubercle; it favors the development of these abnormal products where they had remained until then innocuous in the lungs." "We can now easily understand how pneumonia exudation in a predisposed subject may be modified, and may deviate from its natural evolution." "We can delay and may possibly arrest the formation of tubercle by preventing the development of inflammatory affections." These precepts were announced by the author in 1862, and have since then been "universally admitted and applied."

Page 9, we read: "Phthisis is invariably tubercular, the same elements, with the same arrangement and evolution, are found in the masses ascribed to caseous pneumonia as in the typical granulations." While the author holds the view of anatomical unity, he believes in the "clinical duality." The pneumonic or caseous form, whether microscopically tubercular or not, differs, and always will differ, from the ordinary forms of tubercular phthisis. This duality is the guide to the practitioner. The caseous form of phthisis "is tubercular in a special way, having its own causes, mode of invasion, and evolution." "Special prognostic characters, remarkable for their universally serious nature in the early stages, but relatively favorable when more advanced."

Page 13: "Knowledge recently acquired by means of the microscope diminishes in no way the value of my previous conclusions;" it "even confirms by many and new proofs the notion of the curability of phthisis." Cure takes place by a "fibrous transformation of the neoplasm." And again: "Every form of tubercle is from the first liable to two kinds of transformation,—caseous at the centre, fibrous at the periphery;" its ultimate destiny depends upon which preponderates. Thus the fibrous transformation at the periphery forms a barrier in cases where the centre is "softening and secondary formations have already formed around the primary lesion," and the patient "has now the power of living." The author describes in detail the symptoms and methods of perfect recovery in a number of observed cases. He has seen after death, and considers it by no means rare, total occlusion of a cavity with recovery. Page 25: "A cavern causes no constant modification of prognosis;" it "may be the signal for legitimate hope." And page 27: "Pulmonary phthisis is curable in all its stages." These

being the author's views, it remains to see on what he relies for treatment, and what exact measure of success he claims.

In chapters ii. and iii. the conditions which influence curability are discussed, such as age and extent of lesions, hereditary or acquired, primary or secondary, scrofulous, arthritic, diabetic, and herpetic phthisis. In subsequent chapters the prophylaxis of phthisis, the question of contagion, and remedial measures are considered,—exercise of the lung, cod-liver oil, glycerin, and arsenic and hydrotherapeutics. Page 128: "Each step made in advance proves the necessity for a country life." The author's scheme of cure embraces a diet of milk largely, or koumiss, arsenic in gradually increased doses, all used according to certain principles and for definite reasons which we have not space to consider. Counter-irritation is always used by the author, for he considers that "the primary formation of tubercle and the secondary deposit are both due to the same mechanism; . . . they are the result of preliminary irritation in the form of congestion, catarrh, or inflammation." Instead of being followed by the usual inflammatory products, "diathesis engenders the specific lesion, tubercle." Hence the value of counter-irritation. Catarrh of the apex the author believes to be only a preliminary indication, and not by any means a proof of already existing deposit. These catarrhs are amenable to local treatment as well as change of climate. The different modes of counter-irritation are almost equally good, provided they be continued with "unswerving perseverance," flying-blisters, red-hot iron, caustics. The author prefers caustics as deeper in their action. Vienna paste is applied in three places beneath the clavicle; when these heal, others are applied. Early laryngitis he combats with complete rest of voice, counter-irritation, and topical applications and inhalations. "Wherever habitual expectoration, however small in amount," occurs, inhalation of balsam, tar, or turpentine should be used, and pure beechwood creasote administered. Pyrexia does not contraindicate its use, but gastralgia does. The dose at first is 3 minims daily, increasing by 1 minim a week up to 5 or 6, never any more. It is given in cod-liver oil or glycerin. The use of alcohol—one or two ounces of spirit daily—is advocated, while in strumous phthisis iodized milk may be used when cod-liver oil is not retained.

Pyrexia, when it occurs, must be combated. Where remittent in type it indicates the formation of secondary granulations. Its other varieties and their significance are minutely described. Quinine is used in symptomatic fever, and salicylic acid. Of the quinine the author gives a full dose, 15 grains, so that it is in full action one hour before the expected pyrexia. The author prefers the hydric bromide of quinine; he uses it hypodermically without subsequent trouble, save persistent nodules. In the fever of absorption, salicylic acid is the remedy; and this, also, he at times uses hypodermically. The salicylic acid, the author remarks, will often act for days in arresting fever after one single dose. It is antiseptic, as well as antipyretic. Thirty grains every three days is the usual dose; while he calls attention to the fact that it is wholly without result in the cases of patients afflicted with alcoholism. It should be given four hours before the expected pyrexia, during a single hour, in doses of 7 grains each, with a glass of water at each dose. The water is to guard the stomach and prevent arrest of the urinary secretion.

Hypodermically the author uses the sodium salt. Forty-six injections were made by him in 1880 in eleven phthisical cases. The quantity was from 11 to 22 grains, with an equal quantity of distilled water. Where the smaller dose was employed, the antipyretic effect did not follow until the next day, though lasting three or more days when established. No abscesses and no permanent nodules followed; but in three cases there was sloughing, not extensive. The author more than hints that this method may be useful in other pyrexiæ than that of phthisis. The different varieties of fever described also require great change and variation in the method of general treatment.

We have endeavored to give the reader some slight idea of the scope of the book, but can only mention the extensive treatise on the "treatment by mineral waters" and "the climatic treatment," subjects which the author handles with great skill and some originality. These, however, will prove—dealing as they do with the springs and health-resorts of the old world—of less use to the American reader, though from them he may deduce a theory which may be applied successfully to our own somewhat limited resources of climate. As to the real value of the work, we confess we are somewhat in doubt, but must leave the individual student to discover it for himself; and though he may make no more cures of phthisis after its perusal, he can hardly fail to acquire some additional and valuable knowledge on the subject. E. W. W.

A Practical Treatise on Urinary and Renal Diseases, including Urinary Deposits. By William Roberts, M.D., F.R.S., assisted by Robert Maguire, M.D., London. Fourth edition. Philadelphia: Lee Brothers & Co., 1885.

Of the various works on disease of the kidney which are competitors for the favor of the profession, the book of Dr. Roberts has always seemed to us the most satisfying. The first edition has long been out of print, and it is therefore with great pleasure that we note the appearance of the fourth edition. On looking over the book it seems to us on the whole well up to date.

Revue Scientifique.

The following is a summary of the table of contents of the *Revue Scientifique* for the past month:

May 30, 1885:

Public Works.—Railroads and Geography. By M. Jules Michel.

Physiology.—Milk and its Chemical Constitution. By M. Duclaux.

Zoology.—The Deep Sea Explorations of the "Challenger." By M. Ed. Perrier.

Physics.—The Electrical Resistance of Insulating Substances. By M. G. Foussereau.

Book Notices.—To the North Pole in Balloons, M. Victor Patrice; Course in Chemistry, M. Bouant; Military Tactics and Repeating Arms, M. Simond.

Proceedings of the Academy of Sciences of Paris.

Correspondence and New Inventions.

June 6, 1885:

Physics.—Electricity and Hygiene. By M. Gariel.

Psychology.—The Evolution of Language. By M. Hovelacque.

Anthropology.—The Seventh Cervical Rib of Man. By M. R. Blanchard.

Book Notices.—The Diseases of Children, M. Hénoch; Microscopic Technology and Vegetable Histology, M. Olivier.

Proceedings of the Academy of Sciences of Paris.

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June 13, 1885:

The Conquest of Tonkin, from Unpublished Documents. By Com. Rivière.

History of the Sciences.—The Works of Sir William Thomson. By H. Helmholtz.

Zoology.—The Problematical Organisms of the Ancient Seas, according to M. de Saporta. By M. H. Marion.

Hygiene.—The Maternal Establishments for Young Infants.

Book Notices.—The Bacteria, MM. Cornil and Babès; Diseases of the Spinal Cord, M. Althaus.

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Correspondence.

THE TREATMENT OF TYPHOID FEVER IN THE HOSPITALS OF CHICAGO.

(From our Special Correspondent.)

Dr. Oscar C. De Wolf, Commissioner of Health, says that fifteen years ago typhoid fever was of infrequent occurrence in Chicago. On the other hand, all forms of acute and chronic malarial fevers were constantly and universally observed.

To-day, acute intermittent and remittent fevers are of comparatively infrequent occurrence, while the wards of many of the large hospitals are crowded with typhoid fever patients.

A possible explanation of this remarkable change may be found in the Chicago waterworks, a feature for which the town has established a reputation even rivalling that of the stock-yards.

Professor James Nevins Hyde, M.D., alluding to the prophylaxis of cholera in a recent editorial, says,—

"The sacred singer of Israel once cried, in a burst of poetic imagery, 'Moab is my wash-pot!' Chicago might well echo with the refrain, 'Lake Michigan is my wash-pot, my drinking-cup, and my chamber-pot!'

"Her water-works are indeed great. They supply her with water from the lake fully and freely; in fact, as fully and as freely as she restores to it again the refuse of her corporate body. If there be any germ of disease in her excreta, any virus lurking in her animal refuse, she receives it again in part, after it has been thrown off.

"Not content with emptying her own ejecta into the lake from which she drinks, Chicago pours into it also the drainings from her immense cattle-yards, and from the great slaughter-houses, where the animals brought to her doors from the whole of the Northwest are cut up and packed for the consumption of the world."

The following is a description of a branch of the Chicago River, into which the refuse of the stock-yards is poured. It is clipped from one of the daily journals, and from observation we can declare its truth:

"The South Fork is that fork of the South Branch of the Chicago River starting at Thirty-ninth and Halstead Streets, and emptying into the South Branch in Bridgeport, near the pumping-works. It is about three miles in length, and is the filthiest of all the branches of the river. The foulest, filthiest, deadliest section lies just north of the Union Stock-Yards, and is about one mile in length, from one hundred to two hundred feet in width, and from nine to eighteen feet deep. It is wholly unprotected as to shade, there being no trees nor houses on either side, and when the sun shines upon it, it seethes and boils like a great caldron of oil. To many intelligent people an inspection of the waters of this inland body would be a revelation. The dark, seething mass lying between the two banks of what was once a respectable creek cannot be called water. It is not refuse in its ordinary state. If it were white instead of black, it might be taken for yeast. Its consistency in some quarters is about the same as paint, and when it comes in contact with the hull of a vessel it leaves a coating usually about an inch in thickness, which has become known to the marine classes as 'stock-yards paint.' Something of its character may be judged from the fact that water will not wash it off, and that the only way it can be removed is by taking the vessel into the dry-docks and using a steel scraper. Unlike the ordinary paint, it does not serve to prolong the use of timber, but, on the contrary, serves to hasten its decay.

"No living thing can drink this water and survive. It is a poison even to the grass that grows along the shore if poured upon it in large quantities."

Professor Hyde continues: "The witches' caldron, here correctly described, exhales its pestilential breath about two miles from the spot where some of the wealthy 'packers' of this city have erected palaces which a king might envy, their costly stones overlooking the fashionable thoroughfare, where youth, beauty, premature age, and folly drive their showy equipages in a splendid ignorance of what is floating beyond!"

Is it any wonder that the Chicago hospitals are crowded with typhoid fever patients? A small proportion of the cases, however, really reach the hospitals. More particularly in the southwestern portion of the city, there are large Irish, German, French, Italian, Polish, and Bohemian colonies. The inhabitants exist upon the barest necessities of life, in wretched, foul, filthy hovels. The sewers are elevated above the level of the tenement-houses. Here the typhoid fever patient usually perishes and is buried before the disease is recognized.

The following sketch is a very brief *résumé* of the methods of the treatment of typhoid fever practised in the principal Chicago hospitals. Owing to the absence of any system of keeping accurate records in many of the institutions, statistics as to the total number of patients and the mortality of the disease are deficient.

MERCY HOSPITAL.

Service of Dr. N. S. Davis.

Dr. Davis recognizes fever indications to be fulfilled, or objects to be accomplished, in the treatment of typhoid fever.

First, it is desirable to suspend, as far as practicable, the further action upon the patient of all the causes that may have contributed to the development of the disease.

Second, to restore the natural condition of the general properties of the tissues, and thereby retard or arrest those perverted molecular movements which constitute the disturbances of nutrition, secretion, excretion, etc.

Third, to promote the action of certain excretory organs, and thereby prevent deterioration of the blood by the accumulation of the products of tissue-changes or waste matter.

Fourth, to counteract the development of important local diseases, either in the head, chest, or abdomen.

Fifth, to sustain the patient with nourishment suitably adjusted, both in quality and quantity, to the different stages of the disease.

The first indication is fulfilled by proper regulation of the patient's hygienic surroundings, and the exhibition of *potassium chlorate* in dilute acidulated solution. If this indication be fulfilled, and if the patient be supplied with "proper nourishment, in proper quantities," twenty-nine out of every thirty will recover without medication of any kind.

To fulfil the second indication, chief reliance is placed upon the "excitors of vital affinity," oxygen, potassium chlorate, sodium chloride, mercury bichloride, iodine, the mineral acids, and cold water.

The third indication is met by nitrous ether, *liquor ammonii acetatis*, and digitalis.

Under the fourth indication, attention must be directed to a number of organs. 1. The impairment of the functions of the brain and

important nervous centres, "more especially those centres that govern the action of the vaso-motor, cardiac, and respiratory nerves," is best remedied by the selection of those agents which increase the oxygenation and decarbonization of the blood. Strychnine and the mineral acids are the most effective drugs in this connection.

2. Hypostatic congestion of the lungs, muscular weakness of the heart, capillary bronchitis, and broncho-pneumonia are conditions which contraindicate alcohol in any form. Milk, beef-tea, eggs, coffee, meet the indication.

3. The changes in the alimentary canal, mesentery, spleen, and liver demand the most rigid scrutiny.

The pathological changes in the glands of Peyer and Brunner are of greatest importance. The mineral acids, nitrate of silver, oil of turpentine, and strychnine "improve the tonicity of the smaller vessels, lessen passive congestion and exudation, and arrest the tendency to softening and disintegration by increasing the general property of the tissues, called vital affinity, or by increasing the vaso-motor nervous influence, or by both."

The fifth indication is fulfilled by the administration of proper food. Three propositions may govern the practitioner in this matter:

1. "First, choose such articles for nourishment as, either separately or conjoined, shall contain all the elementary constituents entering into the composition of the blood and organized structures of the human body.

2. "Second, the article or articles selected should be so prepared that when taken into the stomach they are capable of being taken up and assimilated with but little influence from the gastric and other secretions usually required for the digestion and absorption of ordinary food in health, because these secretions are generally much diminished, especially during the middle and later stages of the disease.

3. "Third, the quantity given at any one time should be so limited that it will be all absorbed or assimilated before any part of it has time to undergo fermentation or putrefactive changes, by which tympanites and the irritation of the glandular patches in the ileum might be increased; sufficient to afford the patient a fair degree of support."

Meat-broths, from either mutton, beef, or chicken, seasoned with salt, milk, buttermilk, milk-whey, tea, coffee, and water, correspond to these conditions.

ST. LUKE'S HOSPITAL.

Dr. Hosmer A. Johnson's views as to the etiology and treatment of typhoid fever deserve careful consideration.

Etiology.—The products of the decomposition of vegetable matter effect *quantitative* changes in the blood, and *malarial* fevers result. The products of the decomposition of animal matter cause *qualitative* changes in the blood, and *zymotic* diseases result. Malarial and typhoid fevers may coexist in a new, unbroken prairie country, although the former type usually predominates. The access of the alvine dejecta from typhoid fever patients to drinking-water and food may cause the spread of the disease. It is not, however, the exclusive etiological factor. The stools of typhoid fever patients should invariably be disinfected.

Treatment.—(*a*) *General.*—Dr. Johnson's plan of treatment is symptomatic and supporting. In the beginning of the disease, in case of constipation, it is well to exhibit a mild laxative, in which a little mercury (4 grains, blue mass) and gelsemia ($\frac{1}{12}$ grain) may be incorporated.

Digestive System.—As food, milk, and egg-albumen are sufficient, small quantities at a time, frequently repeated, are given. Dilute phosphoric acid, in small doses, aids in the process of digestion, and acts well as a general nervine. It is not given with any intention of influencing the alkalinity of the blood.

Pyrexia.—When the temperature reaches an elevation of 104.5° F., quinine is exhibited, in conformity with Liebermeister's method. Thirty grains of the alkaloid, followed in one-half hour by half the first dose, may be administered. Cold spongings constitute an important adjuvant. Dr. Johnson is not impressed with the value of cold baths.

Depression.—When the pulse is small and rapid, alcohol is exhibited in tablespoonful-doses every two hours, until it becomes full and slow. Tincture of digitalis is usually associated with alcohol.

Diarrhœa.—When the patient has more than three stools per diem, an emulsion of tincture of opium and oil of turpentine is administered, *pro re nata*, by mouth or rectum. Constipation throughout the course of the fever is regarded as a rather unfavorable element in prognosis.

Hemorrhage.—The foot of the bed is elevated four inches, an ice-bag applied to the ileo-cæcal region, and absolute rest enjoined.

Perforation.—Absolute rest in the hori-

zontal position, with morphine to control pain. Dr. Johnson is opposed to laparotomy under these conditions.

(*b*) *Local Treatment.*—Dry cups or leeches over the ileo-cæcal region will prove beneficial in the early stage of the disease in selected cases. Blisters are painful, and the benefit derivable from them is minimal.

Statistical.—In his private practice and hospital services,—St. Luke's Hospital, Michael Reese Hospital, Cook County Hospital,—extending over a period of thirty-four years, Dr. Johnson has seen about one thousand cases of typhoid fever. The mortality varied with the epidemic, but may be stated in general terms as twelve to twenty per cent.

ALEXIAN BROTHERS' HOSPITAL.

Dr. M. Mannheimer agrees with Dr. C. De Wolf, Commissioner of Health, Chicago, in his views as to the *etiology* of the disease. Twelve years ago typhoid fever was almost unknown in Chicago, while very pronounced types of malarial fever were of frequent occurrence. Now one seldom sees pronounced types of malarial fever, while over one thousand cases of typhoid fever have been treated during the past ten years in the Alexian Brothers' Hospital. The disease is transmitted from one patient to another through the medium of food or water, to which alvine dejecta from typhoid fever patients have gained access.

TREATMENT.—(*a*) *General.*—Dr. Mannheimer's treatment is expectant.

No preliminary laxative is given, unless there is a special indicative for its exhibition.

Digestive System.—Food is exclusively of a liquid character. Milk is the basis.

Mineral acids are exhibited, but not with a view of correcting any excessive alkalinity of the blood.

Pyrexia.—Salicylate of sodium, antipyrine, quinine, and digitalis, cold spongings, and the cold bath are employed as antipyretics.

When the temperature reaches an elevation of 103° F., 20 grains of sodium salicylate are given every hour until the temperature falls. For the last six months antipyrine has been employed with great success in ½-grain doses every two hours until three doses have been taken. In cases of feeble heart, sodium salicylate and antipyrine are contra-indicated. Dr. Mannheimer has observed collapse following the exhibition of these remedies under such conditions. When the heart is feeble, quinine in 5- to 10-grain doses, in combination with powdered digitalis, is given every hour. The cold pack, with sheets, or the cold bath of Liebermeister are invaluable adjuvants.

Depression.—Small doses of brandy or whiskey, frequently repeated, in the form of milk-punch, are relied upon. Dr. Mannheimer is opposed to excessive quantities of alcohol in typhoid fever.

Diarrhœa, when excessive, is treated with vegetable astringents and opium.

Hemorrhage.—Elevation of the foot of the bed, ice to the ileo-cæcal region, ergotine hypodermically, and absolute rest are the remedial agencies.

Perforation.—Dr. Mannheimer is opposed to laparotomy, but enforces absolute rest, and alleviates pain by morphine.

(*b*) *Local Treatment.*—All forms of counter-irritation over the ileo-cæcal region have little effect in the amelioration of the condition of the patient, and none in the abbreviation of the duration of the disease.

Statistical.—In his private practice and hospital services—Alexian Brothers' Hospital, Michael Reese Hospital—Dr. Mannheimer has treated over one thousand cases of typhoid fever, with a mortality of from six to eight per cent.

It is worthy of note that most of these cases of typhoid fever occurred among laborers on the Chicago streets or track hands on the various railroads.

COOK COUNTY HOSPITAL.

Services of Dr. S. A. McWilliams, Dr. Francis G. Bonynge, Dr. Norman Bridge, Dr. Henry C. Kerber, Dr. John A. Robinson, Dr. George B. Abbott.

A few years since the iodine and carbolic acid treatment was extensively practised in the County Hospital. Occasionally, at the present time, 1 drop of tincture of iodine to 2 drops of pure carbolic acid are exhibited every three hours.

In general, however, an expectant and supporting plan is pursued.

Pyrexia.—Quinine and digitalis are exhibited in conformity with Liebermeister's methods. When the elevation of temperature reaches 102° F., cold packs are employed. During the past year Dr. C. S. Bacon, interne, has used, with marked benefit, Kibbe's cot.

Diarrhœa.—The turpentine and laudanum emulsion *per os*, or *per anum*, is employed almost exclusively. Hemorrhage, perforation, and other complications are treated very much in the same way as in the other hospitals.

Statistical.—During the year ending 15th April, 1885, there were discharged from the Cook County Hospital one hundred and eighty-nine patients with diagnosis of typhoid fever. Of these, one hundred and forty-two recovered, nine improved, and thirty-eight (twenty per cent.) died.

MEDICAL DEPARTMENT, UNITED STATES ARMY.

William H. Forwood, surgeon and major U.S.A., stationed at Chicago, says with reference to the etiology of typhoid fever, that he is not at all satisfied with the theory of infection from dejecta which have gained access to the milk, drinking-water, or food of the patient. He objects to the statement in "Ziemssen's Cyclopædia," to the effect that, if the fæcal evacuation of every typhoid fever patient were effectually disinfected, typhoid fever would disappear from the face of the earth.

Out on the frontier, where hygienic conditions are approximately perfect, and where there has been no antecedent typhoid fever, the disease occurs, and is just as virulent as in Plymouth or Chester in Pennsylvania. At Fort Concho, Texas, right on the edge of the "Staked Plains," in 1872–73, he observed a fatal outbreak of the disease in the post hospital, resulting in over twenty deaths. The disease then disappeared, and was observed years later without any assignable cause. It was right to disinfect alvine discharges, and take every prophylactic precaution; it was dogmatic, however, to regard the method of prevention as *adequate*.

Treatment.—(*a*) *General.*—Dr. Forwood's treatment of typhoid fever is expectant. If the bowels are not moved spontaneously early in the disease, calomel, in grain or half-grain doses, repeated every two or three hours until three powders are taken, is exhibited. If the calomel has no effect, one-half fluidounce of castor oil has the desired action. This preliminary laxative removes any accumulation of forces, which, later in the course of the disease, may be the cause of the evolution of much gas and distressing tympanites.

Digestive System.—The patient should be fed well from the beginning of the disease. When this precaution is observed he is not exhausted during the second and third weeks, and he has no tedious convalescence. Milk, new rich cream, an occasional soft-boiled egg, toasted bread, with butter, broiled tenderloin, chocolate, tea, and coffee do not constitute too liberal a dietary.

Pyrexia.—The temperature of the patient's room should not be above 60 to 65° F. When the bodily temperature reaches 102° F. the patient is sponged with cold water, to which a little *aqua ammonii* (later, during sweating stage, alcohol and alum) has been added. When the elevation of temperature reaches 103° F., cold-water baths are indicated. It is not necessary, however, to plunge the patient suddenly into very cold water, and cause him pain and fright. The temperature of the water-bath for adults should be 90 to 95° F., for children, 95 to 98° F. After the patient is in the bath, the temperature of the water may be gradually reduced. The duration of the bath should be from one-half to one hour, and should be repeated as often as the bodily temperature regains its original elevation. With trained nurses there is no fatigue resulting from the moving of the patient from the bed to the bath.

Upon withdrawal from the water, the patient should receive a hot foot-bath, and a glassful of wine may be taken.

Quinine is never exhibited unless, at the outset, there is clear evidence of malarial complication. Then it is only continued for a few days. Antipyrine and sodium salicylate are never administered.

Alcohol is never given to reduce temperature. Late in the course of the disease it may be given in tonic doses to support the patient.

Diarrhœa.—When the patient has more than three stools daily, the diarrhœa is controlled by suppositories of the aqueous extract of opium or a laudanum enema.

Nervousness and Restlessness.—For the nervousness and restlessness usually observed towards night during the second and third week, 6 to 12 grains of hydrate of chloral, in a drachm of brandy, is given with good effect. The jactitation, *subsultus tendinum*, and insomnia are relieved, and the patient's strength is husbanded.

Hemorrhage. — Ergotine hypodermically, cold applications over the right inguinal region, and ice-water enemata are the most reliable agencies to check the loss of blood.

Perforation.—Rest, opium, and warm fomentations over the abdomen are palliative measures in this usually fatal condition.

THE TREATMENT OF EMPYEMA.

To the Editors of the THERAPEUTIC GAZETTE.

GENTLEMEN:—In this month's number of the THERAPEUTIC GAZETTE you quote from Dr. C. N. Gwynne on "the treatment of em-

pyema with special reference to the disease in childhood," in which he made use of the trocar and canula and of incision, but made no reference to the practice of aspiration, which I regard as the best of all.

Some years ago I operated on a girl by incision, and though I saved her life, and she made a good recovery after some time, there was no evidence that the lung ever expanded. In reference to this I made careful examination, but without the least evidence of respiration on that side.

Twelve years ago I had under my care a boy under 4 years of age with empyema. Aspiration was resorted to, and forty-four ounces of pus were taken out at the first operation. The lung was drawn up from its compressed condition so that good respiration was heard over that side of the chest. Eleven days later eighteen ounces more of pus were removed in the same way. Soon afterwards the child sweated profusely, and there was no reaccumulation of pus in the cavity. The child made a perfect and speedy recovery. I believe that by no other way could so speedy and so perfect results have been secured.

At the time of the first operation it was supposed that after perhaps another aspiration it would be necessary to incise and treat as in the ordinary way, but nature came to our relief and saved further trouble.

After all that has been written upon the value of aspiration by Dr. Bowditch and others in such cases, it is strange that Dr. Gwynne should not have mentioned, even if he did not use, this mode of operation. Had I known what I now know at the time of my former operation, I most certainly should have first used aspiration in preference to all other means. Failing in this, it would have been quite time to have resorted to a means certain to leave the lung in a useless or embarrassed condition thereafter.

Some years ago much was said upon this great invention, but of late little appears in print; not, I take it, because the operation has been found less safe and useful, but because, in this section at least, it is too common to be a sensation. But when a physician attempts the treatment of such cases and omits to mention this means while he dwells upon old-time and more troublesome ones, he has not told all he ought to tell.

Dr. Gwynne is quite right in supposing that purulent effusion in children begins as such from the first. But this supposition leaves us to infer that purulent effusion in adults may begin as some other fluid. Is this ever the case? Does a serous or a fibrino-serous exudation ever turn into a purulent exudation? I can believe that the admission of air into the cavity may change the action of the surfaces, and pus be poured out where a serofibrinous exudation took place before. I do not understand that the fluid already excreted changes to another kind of fluid, but I can readily comprehend that a surface which at one time gave out one kind of fluid may under a change in its condition give out a different fluid.

E. CHENERY, M.D.

65 CHANDLER ST., BOSTON, June 22, 1885.

THE HOT-WATER CRAZE.

To the Editors of the THERAPEUTIC GAZETTE:

GENTLEMEN:—Apropos the hot-water treatment, or habit, which is becoming so prevalent, it appears that even centuries ago, when Salamanca was noted for its university, and Valladolid was his residence, the eminent doctor Sangredo held and taught it as one of the tenets of medicine. The doctor may have gone too far with his copious venesections and libations of hot water, in the endeavor to replace impure blood by pure water, and not unfrequently, it is said, the patient succumbed before the substitution was complete. But the theory was none the less plausible to him.

Let us, however, learn the doctor's opinions and methods from the pen of his student, the veracious "Gil Blas." (I quote from the original text, and give a somewhat literal translation.)

Referring to a bedside clinic, doubtless, Gil Blas says, "After the doctor had ordered* frequent and copious bleedings, he added that it was necessary to give the invalid draughts of hot water repeatedly, assuring him that water in abundance was the greatest specific against all maladies."

On another occasion, probably a lecture, he says, "Drink, my sons; health consists in keeping all parts of our machinery supple, flexible, and moist. Drink water in abundance, for it is the universal solvent which suspends all the salts. If, perchance, the current of the blood is sluggish and impeded, it will accelerate it. If rapid and strong, it will retard it."

One more quotation, in confirmation of the adage that there is nothing new under the sun, will be sufficient. "Know, my friend,

* There were professional bleeders and leechers then.

that to cure every kind of disease you have only to bleed your patient and make him drink warm water. This is the great secret to cure all the diseases in the world. Yes, this wonderful secret, which I communicate to you, and nature has not been able to conceal it from my profound observation, while hiding it from my brothers and companions, is reduced to two points: bleedings and hot water, both in abundance. I cannot teach you anything further. You now know the foundation of all medicine, and if you avail yourself of my large experience you will be as great a doctor as I am."

Very truly yours,

C. M. FENN, M.D.

SAN DIEGO, CAL.

WARBURG'S TINCTURE.

To the Editors of the THERAPEUTIC GAZETTE:

GENTLEMEN:—Ever since Warburg's tincture became an officinal preparation I have watched in vain to see some notice in the journals of its use in remittent fevers. I subjoin these notes, hoping to invite attention to the subject.

No one who has used this preparation will doubt its diaphoretic power, the most effective with which I am acquainted; and since its formula has become known to the profession, there can no longer be an objection to its having a fair trial.

Although my experience has necessarily, from my location, been limited, I have reason to believe that the tincture is destined to do a good work. Where I believe it to be most beneficial is in the adynamic forms of remittent fever. It will reduce the temperature, calm the circulation, and give the patient a peaceful slumber, such as is not to be had from any other drug known to me.

During the autumn of 1883 I had under my charge a young man who was suffering from remittent fever in its most aggravated form. He had already undergone the usual treatment with quinine while under the care of a neighboring physician, but without relief. I placed him, after the use of cathartics, upon Warburg's tincture, giving ʒss doses every four hours during the remission. Its good effect was quickly seen, the fever not returning after the first day.

Since that time I have had many cases with similar results; the fever disappearing after the second or third dose.

If this limited experience entitles me to an opinion, it is most certainly a favorable one. Hoping to hear an account of its use in a wider field, where remittent fevers are more frequent and of a more malignant type,

I am yours very truly,

L. A. H. BISHOP, M.D.

DOVER, DELAWARE.

THE TREATMENT OF CYSTITIS.

To the Editors of the THERAPEUTIC GAZETTE:

GENTLEMEN:—During the last few years I have had a number of cases of cystitis on my hands in which I have used the following prescription with the greatest success:

> Tr. elaterium, ʒi to ʒii;
> Fld. ext. belladonna, gtt. xv to xxx;
> Water, q. s. ad fʒiv. M.
> S.—Teaspoonful every two or three hours.

With this treatment is usually combined a tea made from watermelon-seeds or elm-bark. My failures with this treatment have been very few. In a few instances, where the case seemed somewhat rebellious, I have given the elaterium strong enough to get the cathartic effect of the drug. The specimen of elaterium from which the tincture is made should be perfectly pure, or the results cannot be depended upon. The way that I prepare the tincture is to exhaust 1 grain of elaterium in an ounce of pure alcohol, to which 4 drops of nitric acid have been added.

Very truly yours,

FLOYD CLENDENEN, M.D.

LA SALLE, ILL.

Notes and Queries.

A NEW EXTRACT FROM COCA-LEAVES.

Since the discovery of the anæsthetic properties of cocaine by Dr. Koller, who, however, employed it only in ocular therapeutics, it has rendered immense service to general surgery, and even to medicine, but it is still only obtained at great cost. In order to make its use more generally applicable, chemists and druggists have endeavored to utilize the residue of the coca-leaves after the extraction of the alkaloid so much sought after, by subjecting the leaves to further coction, etc., and thus obtaining a second extraction of cocaine. During the process, however, it was found that instead of cocaine another substance was discovered, and this new substance is a derivative of hygrine, which does not possess the same properties as those of cocaine. In applying this new substance to the eye under

the impression that it was cocaine, PROFESSOR PANAS found that it determined a great and persistent dilatation of the pupil, which effect was rather different from what he was in the habit of obtaining with the hydrochlorate of cocaine. Moreover, while cocaine, in addition to its mydriatic property, was a powerful local anæsthetic, hygrine was a powerful mydriatic, but did not possess any anæsthetic quality. The mydriatic property of hygrine was at least equal to that of atropine, the effects, however, lasting a much shorter time, and in trying the action of eserine, Professor Panas found that while this substance overcame the dilatation of the pupil produced by atropine, and only for a short time, it completely abolished the mydriasis due to hygrine.—*N. Y. Medical Record*, May 23, 1885.

REUNION OF SEPARATED MEMBERS.

DR. KLEIN, of the Austrian army, reports two cases of perfect reunion after separation of members, which clearly demonstrate that the preservation of separated members in alcohol is not the sole office of the surgeon in such accidents. Both cases referred to self-inflicted amputation of fingers (to avoid military service) In one case union resulted in twenty-two days, in the other, where the finger was only found half an hour after the amputation, the cold and blue member grew warm on the second day, and had re-established its former relations completely within six weeks. Iodoform-gauze was used in both cases.—*Wien. Med. Woch.*

A NEW ETHER.

M. RABUTEAU has prepared a new ether,—the salicylate of methyl. It is almost white, has an agreeable smell, and is almost insoluble in water. It is prepared by treating methylic alcohol by salicylic acid or sulphuric acid, or even a better formula is that of sodium-salicylate, sulphuric acid, and alcohol. It is a mono-ethyl, and therefore almost an acid, and forms salts in presence of an alkali. It colors salts of iron violet, and behaves like salicylate of sodium. This ether does not produce anæsthesia. Part of the dose of salicylate of methyl is utilized in the organism, and part eliminated by the respiratory and renal organs. The vapor of salicylate of methyl is easily detected on being brought into contact with iron-perchloride.—*British Medical Journal*, April 25, 1885.

TREATMENT OF EARACHE.

M. MOURE (*Journ. de Méd. de Bordeaux*) uses habitually a combination of atropine with morphine to quiet the pains of earache; giving relief to otalgia and to cases of subacute otitis of the tympanum and of the Eustachian tube, particularly in children. He prefers a solution of morphine to instillations of oil, laudanum, and ether, these substances having the effect of producing a traumatic meningitis and sometimes graver lesions. He prescribes: Sulphate of atropine, 2 to 5 centigrammes; chlorhydrate of morphine, 5 centigrammes; neutral glycerin, 15 grammes, on cotton-wool at the external auditory meatus, and, when necessary, a drop or two by instillation night and morning into the auditory canal. This will relieve external otitis and furunculous otitis.—*Medical Herald*, May, 1885.

THE ADMINISTRATION OF QUININE.

It often happens that the sulphate of quinine fails to produce the expected results, even in disorders of a malarial nature, because it has not been administered at the proper time. As pointed out by DR. LUCAS-CHAMPIONNIÈRE, quinine should be so administered that the principal absorption should occur at the time of the access of the fever; consequently it should be given about eight hours before this time, as that interval is nearly always required for the absorption and for the production of the physiological results. If a large dose is to be used it is preferable to divide it in two, and to give the first half eight hours before the febrile access and the second four hours after the first.—*Journ. de Médecine*, May, 1885.

ANISIC ACID AS AN ANTIPYRETIC.

One of the most recent additions to the list of antipyretic remedies is anisic acid formed by the oxidation of the oil of anise. It occurs in the form of colorless, prismatic crystals, soluble in alcohol and ether. In its antipyretic effects it resembles salicylic acid, and it is decidedly antiseptic. It causes increased arterial tension, and has a feeble toxic action, causing epileptiform convulsions in animals when it is injected into the veins in large quantities. In its pure state it is said to form a good dressing for open sores. Its use as an antiseptic is not followed by any unpleasant after-effects, as is sometimes the case with salicylate of sodium.—*Pharm. Journ. and Trans.*, May 30, 1885.

EUCALYPTUS IN TYPHOID FEVER.

The well-established germicidal properties of eucalyptus led Dr. Leighton Kesteven (*Practitioner*, May, 1885) to its employment in the treatment of typhoid fever, and as the first few cases in which a mixture containing eucalyptus (in doses of from 2 to 5 drops made up into an emulsion with mucilage) was given seemed to be followed by some benefit, he at once commenced its methodical employment in an epidemic of typhoid fever. Of two hundred and twenty cases of typhoid fever which he attended in about eighteen months, he only had four deaths; and in each of these the patients were almost at the point of death before he was called in. As the result of the use of eucalyptus, he states, first, that it steadily and permanently reduces the force and frequency of the pulse, followed, secondly, by a lowering of the temperature. Thirdly, the beneficial effect on the tongue is very marked, removing a thick brown coating and dryness, and frequently cleaning the tongue entirely in a very short time. Fourthly, the skin, along with the reduction of temperature, becomes moistened and soft in contrast with the harsh, dry, hot skin so frequent and persistent. As regards the mode of administering eucalyptus, Dr. Kesteven now gives 10 minims every four hours, and in cases where this drug does not agree well with the stomach, careful emulsification and the addition of half a drachm each of aromatic spirits of ammonia, spirits of chloroform, and glycerin will often remove the nausequs taste.

HOW TO TEST ERGOT.

To distinguish young from old ergot, Koster recommends to digest thirty grains of it in two drachms of ether, and to shake it repeatedly. If the ergot be of a recent date, the ether will remain almost colorless, while old ergot causes a distinctly yellowish discoloration (*Arch. der Pharmacie*, xxiii., 1885, No. 31).

THE GLUCOSIDE OF BOLDO AS A SUBSTITUTE FOR COCAINE.

Many attempts have been made to find a less expensive substance as a substitute for cocaine. Among other investigators, M. Laborde tried some experiments with theine and caffeine, with a view of ascertaining whether these alkaloids possessed the same anæsthetic properties as cocaine; but he was always disappointed, as their application to the cornea, even in a saturated solution, did not produce the least anæsthetic effect on that membrane. In connection with this subject, it may be mentioned that Dr. Dujardin-Beaumetz considers that the degree of anæsthesia produced on the cornea by cocaine is the best test of its purity.

The glucoside of boldo is another substance proposed as a substitute for cocaine, and in some experiments with this substitute M. Laborde found that, in certain proportions, the ocular anæsthesia produced by it was as well marked and altogether comparable to that resulting from the application of cocaine.—*N. Y. Medical Record*, May 23, 1885.

COCAINE IN DIPSOMANIA.

About the last use we have seen recommended for the universal panacea, cocaine, is its employment as a cure for alcoholism. According to Dr. Pollock (*St. Louis Medical and Surgical Journal*, May, 1885), the injection of a four per cent. solution of cocaine into the pit of the stomach of a man suffering from delirium tremens produced sleep so rapidly that he had hardly time to withdraw the syringe before the patient was asleep, and the next day was able to attend to his business and was in perfect health; and now, to complete the tale, instead of loading himself up with alcohol, he injects one or two drops of cocaine and appears to be perfectly satisfied with it.

PRESERVATION OF ALKALOIDAL SOLUTIONS.

Much has been said and written on this subject of late, and many have been the suggestions. In the English Pharmacopœia most of the alkaloidal solutions are ordered to be preserved with rectified spirit in certain proportions, the solution of sulphate of atropine being an exception. There cannot be much objection to the use of this preservative when the medicines are intended for internal use *per os*, but when required for dropping into the eye, ear, or other delicately lined part of the body, or for subcutaneous injection, the use of spirit then becomes objectionable because of the smarting pain produced. Liquor atropinæ, B.P., is a notable example, as also the hypodermic injection of morphine. In place of spirit we have many useful substitutes or means of avoiding this particular difficulty: 1. The use of neutral solutions of the

alkaloids with tartaric, salicylic, and other organic acids. 2. The addition of phenol, thymol, salicylic acid, boracic acid, and such antiseptic substances in minute quantity. 3. The use of camphor water, glycerin, etc., as the solvent. With regard to the first method, tartrate of morphine may be found a very useful salt for subcutaneous use, as it is readily soluble in water, keeps fairly well, and causes less irritation than the acetic solution. The same applies equally to atropine solution, but it may be mentioned that each of these do not keep for very long periods without the usual fungus formation. The second method may be objected to because of the powerful nature of the substances named, but there need be no fear, because a very small quantity suffices. The salicylates of the alkaloids are known to keep fairly well in solution even when exposed to the air, and their effect in such a combination is not impaired. Apomorphine solution may contain a trace of phenol to preserve it. Cocaine solutions are said to be useless after two weeks if not preserved by means of some such preparation as a saturated solution of salicylic acid, and very likely this may account for the failure experienced by some practitioners in obtaining the "local anæsthesia" said to be produced so markedly by this recently much-used article of materia medica. The third method may be employed with considerable advantage for solutions of atropine, and doubtless also for eserine, pilocarpine, duboisine, and gelsemine, when they or their salts are easily soluble in this solvent. Glycerin dissolves some alkaloidal salts very readily, and when diluted with a little water, to thin the product a little, may serve well for hypodermic injection, the pain produced sometimes by the glycerin, especially when used hypodermically, being greatly mollified by the addition of the water. Another method recently recommended by Dr. Macnaughton Jones for the preservation of these solutions is based upon the supposition that light aids in bringing about these changes. He proposes the use of a glass bottle colored blue or yellow, and provided with a vulcanite air-tight stopper flanged with india-rubber, and having a little vulcanite pipette surmounted by a small cap. By inversion and warmth of the hand a drop or more may easily be obtained, without waste of material (which may be expensive), and with the additional advantage that the alkaloidal solution keeps longer, as the air does not so readily exert its influence in introducing fungus-spores.—*Birmingham Med. Rev.*, May, 1885.

A CRYSTALLINE ALKALOID FROM POMEGRANATE-ROOT BARK.

Carl Julius Bender (*Midland Medical Miscellany*, June 1, 1885) reports that his investigations of the constituents of pomegranate-root bark have convinced him that it contained, besides two amorphous bases, only *one* crystallizable alkaloid. An active and pharmaceutically manageable preparation, which the author prefers to call *punicine* (instead of *pelletierine*), is obtained in the following manner: The powdered root-bark is mixed with about twenty-five per cent. of its weight of slaked lime and about five per cent. of soda solution of specific gravity 1.160 (or an equivalent amount of any other strength), and enough water, to a soft mass. After twelve hours' standing, during which time it has repeatedly been stirred, the mass is placed upon strainers, allowed to drain, and then pressed. Fresh water is added, and the process repeated until the bark is exhausted. The strained liquid is faintly supersaturated with acetic acid, filtered, and evaporated in a vacuum apparatus at a temperature not exceeding 30° C. (86° F.). A sufficient quantity of caustic alkali is now added to set the alkaloid free, and the latter extracted by shaking with chloroform. The chloroformic solution is at once shaken with diluted sulphuric acid. The latter should not be used in excess; not more should be used at any one time than can be saturated by fresh alkaloid produced in subsequent operations on the same day. The neutral solutions of the alkaloidal sulphate are digested with animal charcoal, filtered, mixed with an excess of bicarbonate of sodium (free from carbonate), and then extracted with chloroform absolutely free from alcohol. The chloroformic solution having been dehydrated by shaking with bicarbonate of sodium and filtered, the bases are removed by agitation with a mixture made in the proportion of 1 grm. of sulphuric acid to 10 c.c. of water, without using an excess of acid. This process is repeated once or twice more. The solution finally obtained is spread upon plates of glass, and dried without heat by exposure to air. The saline mass is scraped together, dissolved in the least possible quantity of boiling absolute alcohol, and mixed with ether, which causes crystals to form. The mother-liquid, still containing some amorphous sulphate, is removed by a suction-filter, the residue washed with a small quantity of alcohol containing ether, finally with pure ether to remove the still adhering liquid, and dried at 30° C. (86° F.). The dry

sulphate is now dissolved in distilled water, treated with animal charcoal, filtered, and evaporated in vacuo, when the salt will remain in the form of colorless crystals, permanent in the air. The liquids from which this alkaloid has been removed by means of bicarbonate of sodium may be worked for the amorphous bases by adding caustic soda, shaking with chloroform, and saturation with acid. The solution thus obtained, neutralized if necessary, is mixed with the residue of the ethereo-alcoholic menstruum, diluted with distilled water, and alternately mixed with solution of tannic acid and very weak water of ammonia, so that *tannate of punicine* may be obtained, which, when washed, pressed, dried at a gentle heat, and comminuted, forms a yellowish-gray powder.

CASCARA SAGRADA.

The query as to whether cascara sagrada possesses any greater laxative properties than frangula bark, or the common buckthorn bark, Rhamnus catharticus, is answered by the *Western Druggist*, June, 1885, as follows:

Although the various species of rhamnus contain nearly the same active principles, they differ in their medicinal action. Rhamnus frangula, administered in the form of a decoction, is very popular as a mild laxative. The common buckthorn, or Rhamnus catharticus, is much more active, rather drastic in its effects, and is regarded as a hydragogue cathartic. Intermediate between these in medical activity stands the species R. Purshiana, or cascara sagrada. Its action as a laxative is always prompt and without the least tendency to cause "griping." Indeed, we have no remedy which can be relied upon, where vegetable laxatives are indicated, to act as efficiently as cascara sagrada without causing disagreeable disturbances or engendering undesirable symptoms requiring a constant resort to purgatives. Its value is especially apparent when administered to correct these symptoms (termed "habitual constipation") in small and repeated doses. In common with other drugs of similar character cascara sagrada has frequently been discarded as an unreliable agent, because failing to act in special cases where any other vegetable cathartic would also have failed to be of service. To obtain the best results from the remedy the bark must be neither too young nor so old as to bear an excess of cork, and must be of comparatively recent collection. A great deal of cascara sagrada as found in the market is almost worthless. Preparations from the bark, the fluid extract for example, should be prepared with menstruum sufficiently aqueous to extract the principles soluble in water, and yet at the same time of sufficient alcoholic strength to extract the resins soluble in alcohol, and to prevent these from precipitating in the finished extract. From the fact that the constituents of the bark are so complicated, liquid preparations from it frequently precipitate, and their activity correspondingly diminishes. A concentrated preparation in the dry form may possibly be prepared from it, bearing the same relation to the drug and produced by the same method as in resin of podophyllin. This would be a very desirable preparation, and may be termed *rhamnin*, which, we think, would be more appropriate than "cascarin."

NOTES ON A FEW ARTICLES OF THE INDIAN MATERIA MEDICA.

Within the last few years considerable attention has been paid to the subject of the Indian materia medica, and the spirit of inquiry thus set on foot has resulted in many Indian drugs being subjected to clinical trials in European hospitals and elsewhere, and many of them have been admitted into officinal pharmacopœias. In the *Brit. Med. Journ.*, June 6, 1885, DR. EDWARD J. WARING calls attention to several other Indian drugs which seem to deserve notice.

First of these is the fruit of Carum ajowan, an umbelliferous plant common under cultivation throughout India. Under the name of ajava seeds they were brought to the notice of the profession in Europe in 1873 by Dr. Percival, but they fell into unmerited neglect. Dr. Waring's impression is that they are the most powerful of all the umbelliferous carminative seeds, and that they may well replace others in practice. Their action may be regarded as combining the stimulant quality of capsicum or mustard with the bitter properties of chiretta and the antispasmodic virtues of asafœtida. An essential oil, of which they contain about five per cent., and a distilled water are officinal in the pharmacopœia of India. The fruit of this plant is now a recognized source of thymol, whose antiseptic properties, joined with its powerful stimulant action, might indicate a probability of its proving of service in the treatment of cholera. In the treatment of dipsomania this fruit is also of value, as it seems to remove the craving for spirits.

Another seed commonly met with in all

Indian bazaars which seems to merit attention is the Plantago ispaghula. On infusion mucilage is so abundantly yielded by them that one part of them with twenty of water forms a thick, tasteless jelly. The seeds are, therefore, useful as a demulcent in catarrhs, renal affections, etc., but their greatest value is in the treatment of diarrhœa. In the chronic diarrhœa of Europeans who have long been resident in India, ispaghula seed is said to answer better than any other remedy. The dose of the seeds for an adult is 2½ drachms, with ½ drachm of sugar candy. They are administered whole, and in their passage through the intestines they absorb as much fluid as makes them swell, and by the time they reach the central and lower portions of the canal they have given out a large amount of bland mucilage, and this they continue to do until they have passed over the whole of the intestinal tract.

Another article to which Dr. Waring calls attention is the Scopolia luridus, which as a mydriatic appears to be equal, if not superior, in power to belladonna. The tincture prepared from the leaves in the proportion of one ounce to eight ounces of alcohol, administered to different patients, the largest dose being 20 drops within twenty-four hours, was found to produce an extreme dilatation of the pupils in two cases so as to cause blindness, which only disappeared when the medicine was discontinued.

Another subject which appears deserving of notice is the styptic or hæmostatic virtue of the milky juice of the Jatropha curcas, of which it is stated that the local application of the fresh juice has the effect of immediately arresting bleeding in cases in which alum, turpentine, and perchloride of iron have failed to act. It is stated to produce no pain in its action, nor to act as a caustic, but that it simply coagulates the blood and covers the bleeding surface with a tenacious fluid. It has also been stated to cure aneurism when injected subcutaneously.

Another plant which is probably destined to play an important part in the future of the Indian materia medica is the Andromeda leschenaultii. This plant has been found to contain the essential oil of wintergreen, and therefore contains large quantities of salicylic acid. Experiments made with this oil have succeeded in yielding carbolic acid in considerable quantities, equal to the purest kind obtained from coal-tar. The carbolic acid so obtained is said even to possess advantages over that obtained from the coal-tar, as it is less deliquescent, cannot be contaminated by certain dangerous products of coal-tar, and may be obtained almost if not quite as cheaply.

ALKALOIDS OF QUEBRACHO.

Drs. E. Harnack and H. Hoffmann give the following *résumé* of their researches on quebracho. The bark contains four crystallizable alkaloids, *aspidospermine*, *quebrachine*, *quebrachamine*, and *aspidospermatine*, and also two amorphous alkaloids, *aspidosamine* and *hypoquebrachine*. The writers have studied the action of these alkaloids upon frogs and mammals, and have arrived at the following conclusions: All the alkaloids of quebracho exercise a paralyzing influence upon respiration in mammals as well as frogs, and in this respect quebrachine has a marked power of action. All the alkaloids excite a feeling of nausea; but aspidosamine alone causes vomiting. Hypoquebrachine and aspidosamine paralyze only the extremities of the motor nerves. They all paralyze directly the striated muscular fibres of frogs, but in mammals this effect is much less marked and even doubtful. In frogs the heart is rapidly paralyzed by these alkaloids, but in mammals this effect is less rapid, and usually the organ continues to beat after the complete cessation of respiration. Aspidosamine in its action upon frogs closely resembles apomorphine. This similarity in action does not obtain in man. Thus the emetic effect of apomorphine is shown after the administration of a much smaller dose than will produce vomiting with aspidosamine; and apomorphine causes violent excitement of the nervous centres, particularly the centre of respiration, whereas aspidosamine, on the contrary, quiets the respiration, and renders it superficial. The general effect which the alkaloids of quebracho have of lowering the excitability of the respiratory centre renders them of real therapeutic value, and in this respect ranks them along with morphine and hydrocyanic acid in therapeutic efficacy. They are indicated in dyspnœa depending upon disease of the circulatory apparatus to the exclusion of those originating in insufficient oxygenation or arterialization of the blood. Benefit, nevertheless, may be obtained from their use in dyspnœa due to asthma, chronic pneumonia, and intrathoracic effusions. The alkaloids which may be best substituted for quebracho are quebrachine and aspidosamine. The latter is less energetic in its action, but is preferable on account of its special effect upon the respiration.

However, it is less easily obtained pure than quebrachine, and besides has such marked emetic power, and is absorbed with so much difficulty, that quebrachine or its salts is generally to be preferred.—*Midland Medical Miscellany*, June 1, 1885.

NOTE ON YOPON TEA.

The yopon (Ilex cassine L.) is a shrub met with in the Southern States of America, where its leaves are occasionally used as a tea. Formerly it was employed by the Indians in the preparation of a "black drink," and, according to Hale, at a certain time of the year they used to come down in droves from a great distance to the coast south of Virginia for the purpose of drinking it. Large quantities of the leaves were thrown into a great kettle of water suspended over a fire, and the Indians sitting around helped themselves to large draughts, which after a short time induced free and easy vomiting. This treatment was continued during two or three days until it was considered that a sufficient cleansing had been effected. Some of these leaves have been submitted to a chemical examination by DR. VENABLE, who reports (*Journ. Amer. Chem. Soc.*, April, 1885, p. 100) that he obtained from them a small quantity of caffeine, equalling .27 per cent. of the weight of leaves used. It will be remembered that caffeine has also been found in "maté" (Ilex Paraguayensis), used in South America as a beverage.—*Pharmaceutical Journ. and Trans.*, May 30, 1885.

HEROIC OR POISONOUS DOSES.

At the Société de Thérapeutique M. HUCHARD brought forward to the notice of his colleagues several examples of accidents succeeding the administration of iodide of potassium in large doses. Besides the iodism usually observed, such as swelling of the eyelids, œdema of the face, and even iodic purpura, other symptoms of a graver character have been observed by him in two cases. In the first, that of a man who took 40 grains of the iodide and a drachm of the bromide for an aneurism, very violent dyspnœa followed. The second, a syphilitic, was attacked with such severe suffocation, after having been given a certain quantity of the iodide, that tracheotomy had to be performed to save his life. M. Lereboullet said that when he was house-surgeon at the hospital in Strasburg he saw as much as 9 drachms of iodide of potassium a day given for syphilis. Evil results rarely followed this large dose, and he thought that idiosyncrasies in persons would account for the accidents referred to. In affections of the aorta and in atheroma he has given it in small doses (5 or 6 grains) with the best result, but it should be continued for a long while. M. Huchard said that he gave the salt at the rate of 1 gramme a day in angina pectoris, and he is confident that he has obtained several definite cures.—*Med. Press*, June 3, 1885.

A REMEDY FOR GOUT.

The solution of the biniodide of mercury in potassic iodide, known as the Edinburgh mixture, is of great service in the treatment of gout. DR. C. R. ILLINGWORTH (*Brit. Med. Journ.*, May 30, 1885) prescribes it as follows:

> Sol. hydrarg. bichlorid. (B.P.), ʒvi;
> Potass. iodid., ʒss;
> Inf. quassia ad., ʒvi. M.
> S.—Teaspoonful every three hours.

If there is much pain he adds 2-minim doses of the solution of morphine or 5-grain doses of chloral and bromide of potassium with simple syrup. Of course when congestion or actual inflammation of the kidney or other internal organs exists this prescription should not be used.

POISONING BY YELLOW CHROMATE OF POTASSIUM.

A case is reported in the *Pharmaceutical Journal and Transactions*, June 6, 1885, of a young woman who was poisoned through taking a quantity of yellow chromate of potassium that had been supplied to her through mistake for sulphur by a herbalist. A teaspoonful had been mixed with a tumbler of water, and she had drunk nearly half of it when the irritant properties of the salt manifested themselves, causing severe vomiting and painful purging. Medical aid was obtained, and the nature of the poison having been ascertained, the sufferer was relieved by the administration of castor oil and laudanum.

FOR CONSTIPATION IN YOUNG CHILDREN.

DR. POULAIN, in the *British Medical Journal*, extols the use of a tablespoonful of fine bran night and morning in a cup of bread and milk. The bran is warmed in the milk and then poured on the bread.